EMPLOYMENT AND POPULATION ANALYSIS AND PROJECTIONS OGDEN METROPOLITAN AREA, UTAH AND THE UNITED STATES

Economic Section of

The Salt Lake Area Transportation Study

Prepared by

LAWRENCE NABERS
Associate Professor, Department of Economics

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Professor, Department of Economics

Prepared for

The Utah State Highway Department
and
Local Government Agencies

In Cooperation With

The U.S. Bureau of Public Roads

The Bureau of Economic and Business Research
College of Business **University of Utah**

Studies in Utah's Resources and Regional Development

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PREFACE

This publication reports the second of three employment and population projections to the year 1980 which have been undertaken by the authors on Utah metropolitan areas. In 1962, Dr. Jewell J. Rasmussen, Department Chairman and Professor of Economics, and Dr. Lawrence Nabers, Professor of Economics, completed an economic analysis of the Salt Lake Metropolitan Area (Salt Lake County and the south half of Davis County). This publication contains an analysis of the economy of the Ogden Metropolitan Area (Weber County and the north half of Davis County). Research, currently in process by the two economists, will provide a similar forecast for the Provo Metropolitan Area (Utah County) to be published early in 1964.

All three assignments have been initiated by officials of the Utah State Highway Department, the U. S. Bureau of Public Roads and representatives of each of the local areas. All will be used in connection with an intensive research and planning program of the Utah State Highway Department, the Bureau of Public Roads and local communities designed to provide adequately for present and future transportation facilities and to maximize an orderly economic development of cities and counties.

As with the original Salt Lake study, this Ogden study is a key step in developing the future master street and highway plan. The employment and population projections of this volume for the Ogden Metropolitan Area will provide the necessary bench-mark data of expected economic growth which is necessary in order to project future land use and therefrom expected trip origins, destinations and routes.

The University of Utah Bureau of Economic and Business Research, through which the project was coordinated, believes the data will prove useful to the many individuals who must plan wisely for the future economic development of the Ogden area. The careful analysis and research of the economists who authored the study, Dr. Nabers and Dr. Rasmussen, has resulted in information which will be of vital assistance to many.

Osmond L. Harline, Director
Bureau of Economic and
Business Research

SECTION I

INTRODUCTION

Definition of Project

The primary purpose of this study is to project the employment profile and to estimate the population of the Ogden Metropolitan Area to the year 1980 by five-year intervals. This study is one phase of the Ogden Metropolitan Transportation Study and is intended to provide the basic information about the present economic structure and future economic patterns essential to the projection of traffic generation and possible traffic patterns in the Ogden Metropolitan Area.

This area includes all of Weber County and North Davis County. Specifically, the latter includes the census precincts of Clearfield, Clinton, Kaysville, Layton, South Weber, Syracuse, and West Point.

In addition to the Ogden Metropolitan Area, the study includes the data, analysis, and projections for Utah and the United States. The State and the nation were included in the study for two reasons: (1) There is a high degree of economic interdependence between the Ogden Metropolitan Area and the State of Utah and between Utah and the nation. For example, a considerable amount of the defense activity in Utah is located outside the Ogden Metropolitan Area in nearby counties and the Area will be affected by changes in defense programs both within and without the area. National defense policies likewise will have important effects on Utah. (2) Patterns, trends, and relationships in the smaller regions can be checked against and compared with those

in the large political units. Thus deviations in patterns and growth rates can be noted readily and analyzed meaningfully.

Time Period for Determining the Economic Profile

The time period selected for the study of existing patterns, trends, and relationships in economic activities was that of 1952 to 1960, inclusive. This period was selected for several reasons. (1) This seemed to be the only period for which comparable data of the type required in this study were available for all three levels of government on a consecutive annual basis. (2) Census data, if collected for a sufficient number of observations to have any significance, include periods in which there have been major historical changes and therefore are of doubtful value as guides to future development in the detail required in the present study. (3) The period 1952 to 1960 is far enough away time wise from World War II to be free from most of the war and immediate postwar changes, and it appears to represent a fairly consistent pattern of development which the writers feel will tend to prevail, with some modifications, in the future. The latter statement is a judgment, of course, which the writers will attempt to justify in the study.

All projections of employment and estimates of population are made by five-year intervals, including 1965, 1970, 1975, and 1980. A five-year interval is convenient and provides adequate checkpoints to correct trends that do not seem reasonable nor supportable.

Resume of Study Procedures

For all three levels of government-- i.e., Ogden Metropolitan Area, Utah and the United States--the study followed three essential steps:

1. The collection, classification, and analysis of historical employment data for the period 1952-1960.

2. The determination of the growth rates and patterns for all industrial classifications and then the making of employment projections to 1980 on the basis of such trends and other relevant information.

3. The estimation of population to 1980 based on the relationship of total civilian labor force to civilian population.

The beginning point in the first step was the collection of the basic data for the three levels of government for the years 1952 to 1960. The employment data were gathered from the reports and records of the Utah Department of Employment Security and the publications of the Bureau of Labor Statistics, U. S. Department of Labor. In order to get comparability among the three levels of government, all of the data were classified in accordance with the Standard Industrial Classification Manual, 1945 edition and the Industrial Classification Code, 1942 edition. After the data were adjusted for comparability, they were rearranged in 13 industrial groups having special characteristics pertinent to the Utah economy for analysis and determination of trends.

After thorough analysis of the patterns and trends of employment during the 1952-1960 period, the most critical phase of the study was the selection of growth rates and patterns as a basis for the realistic projection of employment to 1965, 1970, 1975 and 1980. The most important single factor was the actual growth rate exhibited by each major category during the period of 1952 to 1960. Such modifications in the growth rates were made as seemed reasonable in the light of other known factors. Where the pattern of development in the 1952-1960

period seemed inappropriate as a basis for employment projections, such as in defense activities, rather arbitrary changes had to be made.

Total employment of all classified workers does not equal the total civilian labor force; such categories as the self employed, private household workers, and unemployed are not included in the 13 major groups of classified workers. For the want of something more positive, it was assumed that a constant relationship would hold between these groups and total classified workers. Hence the latter total was raised by a constant percentage to obtain the total labor force for each of the three governmental units being studied.

The final step in the study was the estimation of population for the four selected years--1965, 1970, 1975, and 1980. The basic theoretical assumption with respect to estimated population is that population size within a given region is a function of the demand for labor within that region. That is, the number of workers within a region will be determined by the profitability of business enterprise, including agriculture, and the level of government activities. Thus, given the number of workers that the region can sustain and given the ratio between workers and population, it is possible to determine the total population of the region.

It should be emphasized that this approach ignores short run cyclical fluctuations which occur every two to five years and is applicable only to a work force-population situation in which prevailing trends are of sufficient duration that the growth factors inherent in a region's economy can work themselves out. The justification for not considering short run fluctuations is that on a regional or local level the causes underlying such fluctuations may be at least provisionally

treated as different from the causes underlying growth trends. No such assumption may be made, even provisionally, for larger-than-regional areas.

Industry Classification

The decision to use the three government levels, Ogden Metropolitan Area, the State of Utah and the United States, for comparison purposes required that the data be organized in such manner that the components of each of the industrial classifications were strictly comparable. For this purpose employment data were gathered from the Department of Employment Security using the following publications: Utah Labor Market Quarterly, published by the Utah Department of Employment Security, and Employment and Earnings: Annual Supplement Issue, U.S. Department of Labor, Bureau of Labor Statistics. It should be noted that all data for other than insured employees are estimates or are based on interview sampling.

A problem arose relative to the classification system to be used. When the Salt Lake Metropolitan Area study was made, U.S. reports were still being made in accordance with the classification procedures of 1942 and 1945. However, when the Ogden Metropolitan Area study was begun, the U.S. data were available in accordance with the Standard Industrial Classification Manual as revised in 1957. Since the Utah State Highway Department desired to maintain comparability between the O.M.A. study and the S.L.M.A. study and keep cost at a minimum, it was decided to use the old classification for the O.M.A. study. Thus, strict comparability would be maintained with the S.L.M.A. and considerable time and money would be saved in not redoing the analysis of the State of Utah and the United States.

The following procedure was used in adjusting employment data for the State of Utah. A worksheet was set up containing employment for four years -- 1953, 1955,

1956, and 1957. (The figures for these four years for the old code were taken as published by the Utah State Department of Employment Security. The corresponding figures for the new code were taken from a compilation made by the Department of Employment Security entitled, Historical Employment Series for Utah, based on the 1957 Standard Industrial Classification Manual.) Both the old and the new codes were placed on the worksheet and an adjustment factor calculated for each category for each year. The adjustment factor was the percentage change from the new code to the old code. After an examination of each year it was decided to use the adjustment factor for 1957 in converting the 1958, 1959 and 1960 figures to the old classification. There were two reasons for this decision: (1) 1957 seemed to be the most representative of the four years, and (2) being the later year, it would more nearly reflect the picture of the next three years. The percentages were then applied to the new code figures for 1958, 1959, and 1960. The resulting figures were considered to be comparable to the 1952 through 1957 series.

In making the conversions to the old code for 1958, 1959 and 1960 for the Ogden Metropolitan Area the procedure was somewhat different because there were no overlapping year figures on a county level except by major category (i.e., construction, manufacturing, etc.). For this reason it was necessary to use a compilation made by the Department of Employment Security which listed all firms of the State which were reclassified according to the new code. From this compilation, average employment figures for the first quarter of 1958 were computed according to the old code. This involved a firm by firm tabulation for both Weber and North Davis Counties. The adjustments were then made by shifting the actual numbers of employees from one

category to the other. The result was a first quarter tabulation according to the old code. This was compared with the published figures (new code) and the adjustment factors computed in the same manner as for the State.

Inasmuch as the data for 1952, as published by the Utah State Department of Employment Security, did not include a breakdown between North Davis and South Davis, it was necessary to estimate the North Davis figures for that year. But, because employment in South Davis had already been computed for the Salt Lake Metropolitan Area study, the South Davis figures were subtracted from the Davis County totals to obtain the North Davis employment figures.[1]

An examination of the Standard Industrial Classification Manual reveals that one of the most important criteria in determining industrial classification must have been the similarity of the principal product produced by the firms. Insofar as this study was proceeding on the assumption that the size of the population was ultimately determined by the demand for labor as approximated by trends in employment, an alternative criterion for major industry classification was used. Those industries were classified together which in the opinion of the authors of the study were homogeneous with respect to the determinants of employment trends. The result was 13 rather than the nine major industry classifications used by the Department of Employment Security. They are as follows:

I. Food and Lumber: Extraction and Processing
II. Energy and Fuels
III. Primary Metals: Mining and Closely Related Processing

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[1]For details of the estimating procedure, see Lawrence Nabers and Jewell J. Rasmussen, Employment and Population Analysis and Projections, Salt Lake City Metropolitan Area, Utah and the United States (Bureau of Economic and Business Research, University of Utah, September 1962), p.7.

IV. Nonmetallic Minerals and Chemical products
V. Metal Fabrication
VI. Defense
VII. Other Manufacturing
VIII. Construction
IX. Government
X. Transportation and Communication
XI. Distribution
XII. Finance
XIII. Services

Employment data were assigned to these groups from two and three digit breakdowns in the Department of Employment Security reports.

Following are some comments on the logic of the classification used in this study:

1. Food and kindred products and lumber and wood products except furniture were included under the major industry heading of Food and Lumber: Extraction and Processing because it was felt that whatever affected employment trends in agriculture would directly affect trends in the two manufacturing categories. Some components of the manufacturing categories would be directly affected by the growth in population itself, but it was felt that the bulk was dependent on the agricultural and forestry output directly.

2. A category, Energy and Fuels, was established because of its potential local importance and because variation in resource patterns would affect employment in such industries as coal, gas and petroleum differently than it would affect mining. The processing which was directly related to production was included in this category.

3. The category, Primary Metals: Mining and Related Products, was also set up because local resource patterns and trends made employment in this category subject to different causes than mining in general. In addition, processing, such as blast furnaces, smelting, rolling, drawing and extruding, was included in this group because output of raw materials directly affected employment at the processing level.

4. A special category, Nonmetallic Minerals and Chemical Products, was set up because it was felt that the local situation warranted special consideration of this group.

5. The category, Metal Fabrication, was distinguished from Primary Metals because employment in this group was not directly tied to the process of extraction.

6. In addition to the customary inclusions by the Department of Employment Security, the category, Defense, was defined to include the civilian employees of the armed forces as well as one-half of the employees in the sub-category, Electronic Components and Accessories. The latter inclusion is consistent with the experience on the State and local level but can be justified on the national level only by the observation that it is more accurate to include some portion in defense rather than none. As a result of including all civilian employees of the Defense Department under Defense, the category, Government, includes only non-defense employees.

7. In the category, Transportation and Communication, employment in interstate railroads and transportation services was not available under the old code for the State and local levels. It was, however, available under the new code--but only as a combined total--for the period 1952 through 1957. Transportation services and interstate railroads were available separately for the period 1958-1960. Approximately the same ratio which held in the later period was assumed to hold for the entire period.

The components of the other categories are self-explanatory.

Limitations of the Data

One of the more important limitations of the data of the present study is the use of the old method of classification. But as explained on Page 5, budget considerations and the requirement of comparability between the Ogden and Salt Lake Metropolitan Areas left no choice but to use the old method of classification for O.M.A. But any future study taking the present study as its point of departure will have to begin by reorganizing the data collected here in order to bring it into conformity with the current methods of reporting.

Another limitation of the study is the reliance solely on employment data. The movements is employment data do not properly reveal changes in methods of production or changes in the characteristics of the products. In a rapidly altering economy these changes could only be revealed by an analysis of the comparable value data. The decision not to use value data in addition to employment data was based on two factors: (1) adequate value data are only available for census years or for years covered by the census of manufacturing; and (2) the time and

finance limitations on the study. The latter considerations were important because the analysis of the value data is even more difficult and time consuming than the employment data. Nor is it as accurate as the employment data.

Further difficulties are inherent in thedecision to confine the base period to the nine years, 1952-1960. The period is all too short for revealing certain types of trends which may move in longer cycles. In addition, during this period two major events occurred which had the effect of somewhat distorting the regularity of the observations: (1) the post-Korean adjustment which lasted approximately through 1954; and (2) the 1957 recession which showed up in a marked fashion on all of the series being utilized in the study. An alternative might have been to have worked with the decennial census and census of manufacturing data. This alternative was rejected, however, because it would have been necessary to go back too far in time to accumulate an adequate number of observations.

The philosophy which underlies the analysis contained here is simply that the data are taken as evidence which must be weighed qualitatively to justify the conclusions reached. No more is intended than that, in the best judgement of the authors of this study, the conclusions appear to be warranted by the evidence in the form of economic data adduced. It is not implied that the data used in this study have statistical significance in the technical sense that specific values can be given to inferences drawn from an analysis of the data.

There is a difficulty inherent in the study of any small region. One exogenous factor (exogenous in the sense that it cannot be predicted or anticipated by the analysis of the data pertaining to this one region) can completely

change the underlying economic patterns. The larger the region the less the likelihood of such an occurrence. It is, for example, well known that population forecasts for the United States are more likely to be accurate than forecasts for any small region or state.

Finally, a special problem exists in the projection of employment and population in the Ogden Metropolitan Area and the State of Utah because of the large and uncertain role of national defense activities in these areas. The impact on the Ogden and Utah economies of both the direct and indirect defense activities is very substantial, and no other of the 13 industrial categories is as uncertain with respect to developments some ten or twenty years in the future. Future defense programs had to be arbitrarily assumed, and thus any unanticipated major changes in defense activities in Utah could materially change the employment and population estimates of this study.

SECTION II

THE ECONOMIC PATTERN, 1952-1960

The basic data for the determination of the employment patterns and trends in the three governmental units included in this study for the period 1952 to 1960 are given in Tables 1, 2 and 3--Table 1, the Ogden Metropolitan Area; Table 2, the State of Utah and Table 3, the United States. The tables give the total employment in each of the 13 categories and, with the exception of the Service category, also the employment in the principal subgroups of each category.

In addition to these classified employees the tables give the number of workers in the nonclassified groups: self-employed and unpaid family workers, private household workers, unemployed; and, in the Ogden Metropolitan Area and Utah, those involved in labor disputes. There is also given the necessary adjustment figures for multiple job holding among classified workers and statistical discrepancies.

The sum of the total classified workers and the various nonclassified groups is shown in the tables as the total civilian labor force.

Analysis of the Basic Employment Data

The basic hypothesis tested in the analysis of the employment data for the three levels--United States, Utah and the Ogden Metropolitan Area--was that the economic patterns were sufficiently regular and stable to justify the projection of those patterns into the future. Clearly, if there had been major changes either within one of the levels or as between any two of the levels, the projection of the

TABLE 1

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN THE OGDEN METROPOLITAN AREA
1952 to 1960

Category	1952	1953	1954	1955	1956	1957	1958	1959	1960
I. Food and Lumber: Extraction and Processing	4,938	5,011	4,737	4,782	4,765	4,729	4,402	4,447	4,333
Agriculture, forestry and fishing	2,215	2,203	2,088	2,135	2,038	1,952	1,932	1,870	1,841
Food and kindred products	2,627	2,729	2,589	2,573	2,655	2,706	2,386	2,487	2,402
Lumber and wood products except furniture	96	79	60	71	69	66	78	83	82
II. Energy and Fuels	308	331	326	324	401	338	344	330	318
Bituminous coal and lignite mining	12	15	14	14	15	15	14	15	15
Crude petroleum and natural gas production	--	--	--	1	--	--	--	--	--
Petroleum, refining and related industries	3	--	1	--	45	--	--	--	--
Pipe line transportation	--	--	--	--	--	--	--	--	--
Gas and electric utilities) Other public utilities N.E.C.)	293	316	311	309	341	323	330	315	303
III. Primary Metals: Mining and Closely Related Processing	5	16	26	33	61	28	14	13	12
Iron mining	--	--	--	--	--	--	--	--	--
Copper mining	--	--	--	--	--	--	--	--	--
Lead and zinc mining	--	--	--	--	--	--	--	--	--
Blast furnaces, steel works, and rolling and finishing mills	--	--	--	--	--	--	--	--	--
Primary smelting and refining of nonferrous metals	--	--	--	--	--	--	--	--	--
Secondary smelting and refining of nonferrous metals	--	--	9	6	14	13	--	--	--
Rolling, drawing and alloying of nonferrous metals	--	--	--	--	--	--	--	--	--
Miscellaneous primary metals industries	4	15	16	15	17	15	14	13	12
Other mining	1	1	1	12	30	--	--	--	--
IV. Nonmetallic Minerals and Chemical Products	8	6	7	8	9	10	19	17	20
Mining and quarrying of nonmeta lic minerals, except fuel	8	5	6	7	7	9	19	17	20
Chemicals and allied products	--	1	1	1	2	1	--	--	--
V. Metal Fabrication	354	357	350	380	384	445	468	512	557
Fabricated metal products, except ordnance, machinery and transportation equipment	202	201	193	193	203	241	251	287	295
Machinery except electrical	85	88	90	93	114	128	139	138	176
Transportation equipment, except aircraft and parts	66	68	67	93	66	75	77	82	86
Iron and steel foundries	1	--	--	1	1	1	1	5	--
Nonferrous foundries	--	--	--	--	--	--	--	--	--
VI. Defense	19,516	15,817	13,916	13,413	13,208	13,246	14,008	15,315	15,786
Ordnance and accessories	--	--	--	--	--	--	--	283	654
Aircraft and parts	--	--	--	--	98	444	839	1,500	1,570
Electronics	16	17	16	13	20	21	23	21	26
Civilian employees of the defense department	19,500	15,800	13,900	13,400	13,090	12,781	13,146	13,511	13,536

TABLE 1 (Cont'd)

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN THE OGDEN METROPOLITAN AREA
1952 to 1960

	Category	1952	1953	1954	1955	1956	1957	1958	1959	1960
VII.	Other Manufacturing	871	890	834	883	884	879	1,162	1,244	1,340
	Textile mill products	49	33	37	41	39	41	36	34	32
	Apparel and other finished products made from fabrics and similar materials	292	290	225	194	193	179	188	230	275
	Furniture and fixtures	--	--	--	--	--	17	15	17	16
	Paper and allied products	--	--	--	--	--	--	--	--	--
	Printing, publishing and allied industries	222	237	257	263	294	296	317	331	359
	Rubber and miscellaneous plastics products) Leather and leather products)	98	106	98	93	34	36	82	82	82
	Stone, clay and glass products	147	159	153	229	256	195	317	321	320
	Electrical machinery, equipment and supplies	16	16	16	14	19	22	22	22	21
	Instruments and related products	--	--	--	--	--	--	--	--	--
	Miscellaneous manufacturing industries	47	49	48	49	49	93	185	207	235
VIII.	Construction	1,576	1,548	1,227	1,720	2,052	1,764	1,987	2,191	2,122
	Building construction--general contractors	757	649	451	703	778	638	791	896	820
	Construction other than building construction--general contractors	214	339	267	353	467	378	366	324	334
	Construction--special trade contractors	605	560	509	664	807	748	830	971	968
IX.	Government	5,355	6,882	5,840	5,786	6,422	6,645	6,578	6,960	7,202
	Federal government	1,965	3,413	2,391	2,332	2,907	2,955	3,208	3,292	3,157
	State government	721	739	682	680	692	715	739	793	854
	Local government	2,669	2,730	2,767	2,774	2,823	2,975	2,631	2,875	3,191
X.	Transportation and Communication	5,173	4,989	4,576	4,640	4,531	4,362	4,092	4,363	4,348
	Interstate railroads	4,344	4,173	3,841	3,882	3,735	3,537	3,201	3,392	3,304
	Intrastate and local passenger transportation	56	45	32	31	24	22	96	100	108
	Motor freight transportation and warehousing	274	272	206	215	245	240	204	263	285
	Air transportation	12	12	14	15	16	18	17	13	5
	Transportation services	130	134	149	143	152	160	171	177	198
	Communications	345	338	316	335	338	365	384	399	429
	Other transportation	12	15	18	19	21	20	19	19	19
XI.	Distribution	6,380	6,619	6,271	6,666	7,050	7,042	7,063	7,449	7,937
	Wholesale trade	1,017	1,144	1,082	1,141	1,241	1,213	1,045	1,057	1,122
	Food and liquor stores	1,044	1,063	1,075	1,125	1,235	1,280	1,357	1,394	1,530
	Apparel and accessories	536	544	509	545	553	549	550	578	575
	Automotive and accessories dealers	916	949	837	899	924	932	964	991	1,009
	Other retail trade	2,867	2,919	2,768	2,956	3,097	3,068	3,147	3,429	3,701
XII.	Finance	687	735	755	840	820	866	927	1,020	1,040
	Banks and trust companies	263	295	290	286	282	302	317	345	379
	Insurance	67	80	69	66	67	78	88	99	109
	Other financial agencies and services	357	360	396	488	471	486	522	576	552

TABLE 1 (Cont'd)

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN THE OGDEN METROPOLITAN AREA
1952 to 1960

Category	1952	1953	1954	1955	1956	1957	1958	1959	1960
XIII. Services Business and personal	2,676	2,716	2,703	2,879	2,904	2,958	3,215	3,354	3,526
Miscellaneous and Retroactive Liability	4	5	2	11	2	5	5	3	3
Total Classified Employees	47,851	45,922	41,565	42,365	43,493	43,317	44,284	47,218	48,544
Self-Employed and Unpaid Family Workers) Private Household Workers	4,300	4,127	3,920	4,051	4,349	4,367	4,549	4,891	4,939
Labor Disputes	--	--	--	8	--	--	--	58	2
Adjustments for Multiple Job Holding and Statistical Discrepancy	- 913	- 874	-1,184	-1,207	-1,658	-1,655	-1,695	-1,815	-1,870
Total Civilian Employment	51,238	49,175	44,301	45,217	46,184	46,029	47,138	50,352	51,615
Unemployment	642	1,000	1,866	1,601	1,696	2,102	1,973	1,570	2,187
Total Civilian Labor Force	51,880	50,175	46,167	46,818	47,880	48,131	49,111	51,922	53,802

Source: Utah Department of Employment Security.

TABLE 2

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN UTAH
1952 to 1960

	1952	1953	1954	1955	1956	1957	1958	1959	1960
I. Food and Lumber: Extraction and Processing	35,119	35,911	34,354	34,949	34,150	33,132	32,556	32,162	31,690
Agriculture, forestry and fishing	26,284	26,886[e]	25,502	26,022	24,980[e]	23,842[e]	23,503	22,800	22,182
Food and kindred products	8,097	8,232	8,156	8,126	8,268	8,483	8,167	8,252	8,485
Lumber and wood products except furniture	738	793	698	801	902	807	886	1,110	1,023
II. Energy and Fuels	8,790	9,246	8,449	8,375	8,920	10,039	9,630	8,990	8,997
Bituminous coal and lignite mining	3,780	4,044	3,163	2,967	3,071	3,272	2,918	2,505	2,472
Crude petroleum and natural gas production	928	846	917	978	1,247	1,976	1,892	1,742	1,823
Petroleum, refining and related industries	1,411	1,510	1,461	1,524	1,631	1,479	1,509	1,477	1,439
Pipe line transportation	130	122	100	85	83	98	109	103	101
Gas and electric utilities	2,433	2,616	2,689	2,681	2,747	3,080	3,068	3,032	3,033
Other public utilities N.E.C.	108	108	119	140	141	134	134	131	129
III Primary Metals: Mining and Closely Related Processing	16,619	17,235	16,735	18,742	20,012	19,977	16,530	14,387	16,564
Iron mining	523	704	582	506	501	552	459	408	516
Copper mining	4,850	4,959	4,677	4,910	5,993	5,757	4,787	4,258	5,067
Lead and zinc mining	2,187	1,626	1,555	1,677	1,677	1,349	1,122	997	988
Blast furnaces, steel works and rolling and finishing mills	4,902	5,784	5,184	5,511	5,520	5,876	4,836	4,115	5,341
Primary smelting and refining of nonferrous metals	3,427	3,221	3,196	3,193	3,552	3,437	2,830	2,406	2,615
Secondary smelting and refining of nonferrous metals	29	25	16	10	5	4	4	3	29
Rolling, drawing and alloying of nonferrous metals	---	---	24	26	30	29	24	20	---
Miscellaneous primary metal industries	10	14	16	576	467	498	410	349	12
Other mining	691	902	1,485	2,333	2,267	2,475	2,058	1,831	1,996
IV. Nonmetallic Minerals and Chemical Products	1,340	1,425	1,557	1,693	1,927	2,143	2,179	2,134	2,178
Mining and quarrying of nonmetallic minerals, except fuel	471	519	562	648	748	818	839	897	930
Chemicals and allied products	869	906	995	1,045	1,179	1,325	1,340	1,237	1,248
V. Metal Fabrication	3,724	3,924	4,102	4,598	5,273	5,631	5,496	5,476	5,715
Fabricated metal products, except ordnance, machinery and transportation equipment	1,722	1,739	1,907	2,047	2,336	2,411	2,455	2,492	2,452
Machinery except electrical	1,130	1,267	1,325	1,573	1,796	2,029	2,012	2,066	2,233
Transportation equipment, except aircraft and parts	80	86	106	193	254	258	260	265	216
Iron and steel foundries	772	810	741	756	853	903	744	632	770
Nonferrous foundries	20	22	23	29	34	30	25	21	44
VI. Defense	28,832	22,581	19,616	19,313	18,723	18,598	20,625	24,713	26,671
Ordnance and accessories	1	2	3	---	3	462	1,113	2,282	3,141
Aircraft and parts	---	---	---	---	53	438	1,345	4,017	5,695
Electronics	---	---	74	80	122	154	207	292	288
Civilian employees of the defense department	28,831	22,579	19,539	19,233	18,545	17,544	17,960	18,122	17,547

TABLE 2 (Cont'd)

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN UTAH
1952 to 1960

		1952	1953	1954	1955	1956	1957	1958	1959	1960
VII.	Other Manufacturing	7,623	7,989	7,296	7,859	8,265	8,297	8,239	8,600	9,217
	Textile mill products	428	424	406	265	264	253	241	247	194
	Apparel and other finished products made from fabrics and similar materials	1,625	1,908	1,515	1,726	1,800	1,778	1,605	1,519	1,780
	Furniture and fixtures	391	427	432	452	492	544	563	647	686
	Paper and allied products	121	130	122	125	139	146	154	152	152
	Printing, publishing and allied industries	2,289	2,064	2,100	2,123	2,201	2,234	2,332	2,425	2,563
	Rubber and miscellaneous plastic products	425	463	419	468	417	421	357	296	339
	Leather and leather products									
	Stone, clay and glass products	1,545	1,657	1,661	2,003	2,136	1,961	1,966	2,094	2,153
	Electrical machinery, equipment and supplies	333	407	136	164	216	263	363	490	505
	Instruments and related products	84	82	81	83	81	91	83	72	83
	Miscellaneous manufacturing industries	382	427	424	450	519	606	575	658	762
VIII.	Construction	11,937	11,352	11,579	14,632	15,970	15,217	15,197	16,075	15,294
	Building construction--general contractors	3,588	3,657	4,141	5,026	4,950	4,374	4,573	5,144	4,712
	Construction other than building construction--general contractors	3,564	2,805	2,393	3,200	4,053	4,123	4,099	3,736	3,272
	Construction--special trade contractors	4,785	4,890	5,045	6,406	6,967	6,720	6,525	7,195	7,310
IX.	Government	29,493	33,740	33,390	34,434	36,150	38,689	40,253	42,188	44,722
	Federal government	5,355	9,154	8,144	8,081	8,763	9,809	9,643	9,923	10,512
	State government	8,117	8,226	8,403	8,712	9,126	9,579	10,426	10,925	11,525
	Local government	16,021	16,360	16,843	17,641	18,261	19,301	20,184	21,340	22,685
X.	Transportation and Communication	20,327	20,718	19,315	19,698	19,755	19,577	18,808	18,935	18,681
	Interstate railroads	11,148[e]	11,082[e]	9,966[e]	10,011[e]	9,737[e]	9,397[e]	8,383	8,355	7,996
	Intrastate and local passenger transportation	352	321	280	260	257	244	231	232	234
	Motor freight transportation and warehousing	3,488	3,573	3,590	3,980	4,252	4,320	4,229	4,235	4,411
	Air transportation	399	520	470	464	459	510	568	557	590
	Transportation services	438[e]	428[e]	399[e]	400[e]	387[e]	372[e]	337	353	356
	Communications	3,383	3,654	3,577	3,706	3,706	3,819	4,022	4,014	4,076
	Other transportation	1,119	1,140	1,033	877	957	915	1,038	1,189	1,018
XI.	Distribution	48,234	49,979	49,813	52,087	54,860	56,240	56,974	60,583	62,895
	Wholesale trade	12,748	13,033	13,222	13,211	14,036	14,632	14,302	14,981	15,139
	Food and liquor stores	5,652	5,868	6,112	6,753	7,422	7,853	8,092	8,481	8,719
	Apparel and accessories	2,119	2,133	2,068	2,139	2,195	2,243	2,224	2,307	2,365
	Automotive and accessories dealers	6,273	6,750	6,283	6,807	7,144	7,182	7,182	7,545	7,801
	Other retail trade	21,442	22,195	22,128	23,177	24,063	24,330	25,174	27,269	28,871
XII.	Finance	7,143	7,675	8,215	9,149	9,472	9,705	10,161	10,777	11,281
	Banks and trust companies	2,177[e]	2,295[e]	2,360[e]	2,495[e]	2,640[e]	2,711[e]	2,909	3,018	3,208
	Insurance	1,995	2,226	2,302	2,371	2,434	2,606	2,720	2,943	3,036
	Other financial agencies and services	2,971[e]	3,154	3,553	4,283	4,398	4,388	4,532	4,816	5,037

TABLE 2 (Cont')

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN UTAH
1952 to 1960

	1952	1953	1954	1955	1956	1957	1958	1959	1960
XIII. Services Business and personal	22,083[e]	22,995[e]	23,458[e]	24,958[e]	26,114[e]	27,415[e]	28,043	30,478	32,176
Miscellaneous and Retroactive Liability	307	304	309	374	393	358	851	896	699
Total Classified Employees	241,571	244,97	238,188	250,861	259,984	265,018	264,948	275,456	286,432
Self-Employed and Unpaid Family Workers Private Household Workers	31,900	31,900	32,400	34,600	36,100	37,100	39,400	40,900	42,200
Labor Disputes	1,200	500	0	1,000	400	0	200	3,900	500
Adjustment for Multiple Job Holding and Statistical Discrepancy	-4,271	-4,37	-6,388	-6,761	-9,384	-9,618	-9,648	-10,156	-10,632
Total Civilian Employment	270,400	273,000	264,200	279,700	287,100	292,500	294,900	310,100	318,500
Unemployment	8,600	9,000	14,000	11,500	10,000	10,900	16,200	14,400	15,500
Total Civilian Labor Force	279,000	282,000	278,200	291,200	297,100	303,400	311,100	324,500	334,000

e = partly estimated.

Source: Utah Department of Employment Security.

TABLE 3

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN THE UNITED STATES
1952 to 1960
(Thousands)

Category	1952	1953	1954	1955	1956	1957	1958	1959	1960
I. Food and Lumber: Extraction and Processing	9,423.5	9,181.0	9,032.1	9,307.7	9,166.3	8,684.5	8,240.5	8,263.4	8,112.8
Agriculture, forestry and fishing	6,981.0	6,767.0	6,693.0	6,922.0	6,784.0	6,426.0	6,052.0	6,046.0	5,908.0
Food and kindred products	1,653.8	1,658.6	1,636.1	1,639.1	1,646.7	1,603.9	1,566.8	1,559.4	1,560.6
Lumber and wood products except furniture	788.7	775.4	703.0	746.6	735.6	654.6	621.7	658.0	644.2
II. Energy and Fuels	1,500.9	1,471.3	1,405.8	1,404.9	1,453.7	1,460.5	1,383.1	1,343.7	1,314.5
Anthracite mining	63.4	52.8	40.1	31.3	29.3	28.4	20.3	16.3	12.5
Bituminous coal and lignite mining	327.8	285.6	228.5	218.7	228.6	230.0	195.2	168.1	158.9
Crude petroleum and natural gas production	289.8	294.5	303.8	317.1	324.8	326.2	302.6	300.8	288.0
Petroleum, refining and related industries	253.9	260.4	253.4	252.8	252.1	249.5	238.2	233.4	228.9
Pipe line transportation	na	na	na	na	25.9	26.4	25.8	25.1	24.2
Gas and electric utilities Other public utilities N.E.C.	566.0	578.0	580.0	585.0	593.0	600.0	601.0	600.0	602.0
III. Primary Metals: Mining and Closely Related Processing	987.7	1,097.8	994.4	1,077.5	1,100.8	1,115.7	942.4	929.1	993.4
Iron mining	33.5	39.8	35.2	34.2	35.1	38.9	30.8	27.2	33.0
Copper mining	26.5	28.6	27.9	28.9	33.3	32.6	28.6	22.3	29.6
Lead and zinc mining	21.2	17.4	16.4	16.6	17.4	16.7	12.9	12.3	11.3
Blast furnaces, steel works, and rolling and finishing mills	570.7	653.3	580.8	635.3	630.2	642.7	536.7	522.0	569.4
Primary smelting and refining of nonferrous metals	55.7	59.5	62.3	63.4	67.8	68.1	56.2	52.2	57.3
Secondary smelting and refining of nonferrous metals	12.7	13.5	12.4	13.0	14.0	13.2	11.5	12.2	12.2
Rolling, drawing and alloying of nonferrous metals	106.5	113.5	103.0	114.0	118.2	115.3	105.5	115.8	113.2
Miscellaneous primary metal industries	142.3	152.3	136.6	150.4	161.8	165.2	139.4	146.8	149.7
Other Mining	18.6	19.9	19.8	21.7	23.0	23.0	20.8	18.3	17.7
IV. Nonmetallic Minerals and Chemical Products	873.8	910.6	896.0	918.8	948.4	958.1	930.2	958.5	987.6
Mining and quarrying of nonmetallic minerals, except fuel	103.8	105.1	105.1	108.3	115.2	113.3	109.3	110.7	112.6
Chemicals and allied products	770.0	805.5	790.9	810.5	833.2	844.8	820.9	847.8	875.0
V. Metal Fabrication	4,083.3	4,352.4	3,862.7	4,100.5	4,183.8	4,191.8	3,621.4	3,905.3	3,987.5
Fabricated metal products, except ordnance, machinery and transportation equipment	1,042.0	1,141.1	1,049.8	1,108.6	1,119.0	1,132.3	1,029.9	1,069.0	1,078.6
Machinery except electrical	1,664.4	1,705.3	1,555.9	1,592.3	1,730.1	1,737.9	1,501.2	1,611.7	1,636.9
Transportation equipment, except aircraft and parts	1,032.7	1,164.7	970.9	1,091.6	1,014.1	1,016.4	835.2	935.9	988.1
Iron and steel foundries	256.6	249.8	210.7	230.5	243.0	233.8	197.4	223.9	221.8
Nonferrous foundries	87.6	91.5	75.4	77.5	77.6	71.4	57.7	64.8	62.1
VI. Defense	2,413.6	2,644.8	2,381.3	2,324.1	2,399.9	2,441.8	2,257.1	2,268.4	2,188.2
Ordnance and accessories	178.7	242.6	163.3	139.2	131.9	129.3	126.7	141.7	149.7
Aircraft and parts	660.7	790.3	764.1	740.5	809.3	861.7	757.6	734.9	653.4
Electronics	237.1	279.8	245.0	257.8	278.9	289.9	275.7	313.6	336.9
Civilian employees of the department of defense	1,337.1	1,332.1	1,208.9	1,186.6	1,179.8	1,160.9	1,097.1	1,078.2	1,048.2

TABLE 3 (Cont'd)

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN THE UNITED STATES
1952 to 1960
(Thousands)

		1952	1953	1954	1955	1956	1957	1958	1959	1960
VII.	Other Manufacturing	6,819.8	7,102.7	6,680.9	6,900.0	7,039.2	6,952.1	6,589.5	6,924.7	6,998.9
	Textile mill products	1,195.6	1,188.5	1,069.6	1,077.0	1,057.6	1,004.8	941.5	966.0	945.6
	Apparel and other finished products made from fabrics and similar materials	1,199.8	1,230.7	1,170.0	1,206.3	1,211.2	1,198.6	1,156.3	1,210.7	1,215.5
	Furniture and fixtures	361.4	373.6	345.9	368.2	380.1	375.6	357.9	384.0	388.5
	Paper and allied products	503.7	529.6	531.3	550.0	567.7	566.3	547.1	559.9	562.2
	Printing, publishing and allied industries	769.3	793.0	802.8	823.6	850.5	857.9	852.2	868.3	893.8
	Rubber and miscellaneous plastic products	266.7	278.3	248.7	271.9	269.2	265.2	244.6	259.8	259.1
	Leather and leather products	381.2	386.1	370.0	382.9	379.8	369.9	357.2	372.2	364.7
	Stone, clay and glass products	527.5	543.2	515.1	548.1	563.3	552.5	514.5	550.4	549.9
	Electrical machinery, equipment and supplies	847.0	946.7	841.4	865.8	923.2	933.4	843.1	928.0	368.5
	Instruments and related products	310.2	332.8	319.0	321.0	335.6	337.9	315.2	338.9	350.4
	Miscellaneous manufacturing industries	457.4	500.2	467.1	485.2	501.0	490.0	459.9	486.5	500.7
VIII.	Construction	2,633.1	2,643.7	2,592.7	2,759.4	2,929.0	2,808.0	2,648.2	2,766.6	2,772.4
	Building construction--general contractors	948.3	944.5	885.7	922.6	970.0	869.3	750.6	757.9	752.4
	Construction other than building construction--general contractors	514.0	518.0	503.0	516.0	593.0	586.0	569.0	584.0	553.0
	Construction--special trade contractors	1,170.8	1,181.2	1,204.0	1,320.8	1,366.0	1,352.7	1,328.6	1,424.7	1,467.0
IX.	Government	5,270.9	5,312.9	5,542.1	5,727.0	6,097.6	6,464.7	6,795.8	7,048.8	7,409.9
	Federal government	1,082.9	972.9	979.1	1,000.4	1,029.2	1,056.1	1,093.9	1,118.8	1,188.8
	State government Local government	4,188.0	4,340.0	4,563.0	3,511.2	3,767.8	4,025.7	4,231.1	4,405.7	4,646.3
X.	Transportation and Communication	3,618.9	3,645.8	3,428.5	3,477.0	3,541.8	3,524.7	3,276.2	3,277.3	3,276.2
	Interstate railroads	1,399.8	1,376.9	1,215.3	1,205.3	1,190.5	1,123.4	963.6	930.6	893.9
	Intrastate and local passenger transportation	133.1	127.6	126.4	116.1	109.5	103.6	96.4	92.3	90.5
	Motor freight transportation and warehousing	699.1	724.4	718.7	764.9	803.6	812.3	792.5	853.2	884.2
	Air transportation	97.1	104.4	105.2	114.3	130.5	144.6	140.3	145.9	152.1
	Communications	720.0	747.0	741.0	750.0	795.0	810.0	771.0	743.0	742.0
	Transportation services and other transportation	569.8	565.5	521.9	526.4	512.7	530.8	512.4	512.3	513.5
XI.	Distribution	10,280.3	10,533.4	10,519.8	10,846.0	11,221.4	11,301.6	11,140.6	11,384.5	11,641.9
	Wholesale trade	2,743.0	2,782.0	2,796.0	2,873.0	3,008.0	3,065.0	3,013.0	3,070.0	3,135.0
	Food and liquor stores	1,346.1	1,387.8	1,442.9	1,486.4	1,542.4	1,573.9	1,598.8	1,613.6	1,648.8
	Apparel and accessories	589.1	602.0	590.5	596.8	610.3	604.6	592.1	606.0	627.6
	Automotive and accessories dealers	767.8	812.5	771.9	803.0	809.6	804.2	764.5	791.0	813.7
	Other retail trade	4,834.3	4,949.1	4,918.5	5,086.8	5,251.1	5,253.9	5,172.2	5,303.9	5,416.8
XII.	Finance	1,957.0	2,025.3	2,121.4	2,219.1	2,308.1	2,348.2	2,374.4	2,424.7	2,485.4
	Banks and trust companies	480.0	506.3	529.3	549.3	578.7	602.8	615.3	638.4	672.5
	Insurance	704.8	740.8	772.5	795.4	825.9	869.6	895.0	904.0	933.7
	Other financial agencies and services	772.2	778.2	819.6	874.4	903.5	875.8	864.1	882.3	879.2

TABLE 3 (Cont'd)

CIVILIAN LABOR FORCE BY MAJOR CATEGORIES IN THE UNITED STATES
1952 to 1960
(Thousands)

	1952	1953	1954	1955	1956	1957	1958	1959	1960
XIII. Services									
Business and personal	5,423.0	5,486.0	5,664.0	5,916.0	6,160.0	6,336.0	6,395.0	6,525.0	6,638.0
Total Classified Employees	55,286	56,408	55,122	56,978	58,550	58,588	56,594	58,020	58,807
Self-Employed and Unpaid Family Workers	6,101	6,217	6,325	6,410	6,517	6,715	6,790	6,895	6,982
Private Household Workers	1,922	1,982	1,919	2,216	2,359	2,328	2,456	2,520	2,489
Adjustment for Multiple Job Holding and Statistical Discrepancy	-2,274	-2,662	-2,476	-2,660	-2,718	-2,620	-1,874	-1,854	-1,886
Total Civilian Employment	61,035	61,945	60,890	62,944	64,708	65,011	63,966	65,581	66,392
Unemployment	1,932	1,870	3,578	2,904	2,822	2,936	4,681	3,813	3,913
Total Civilian Labor Force	62,966	63,815	64,468	65,848	67,530	67,946	68,647	69,394	70,306

na=not available.

Source: U. S. Bureau of Labor Statistics

base period growth patterns would not have been justified. In general, it was found that the individual major industry groups evidenced a considerable degree of uniformity during the base period for each of the three levels, that the trend in the relationships among the three groups was reasonably constant, and that the more obvious deviations from patterns of regularity could be explained in terms of the historical events during the period.

The first step in the analysis of the data was to determine the percentage of employment in each major industry category to total classified employment for each year for each of the three levels. The purpose of computing the percentages was to detect tendencies on the part of the individual major industry categories to grow at a faster or slower rate than total employment. These percentages are given in Table 4, while Chart 1 shows graphically the changes, if any, for the principal categories over the nine-year period.

The next step in the analysis of percentage changes was the construction of location quotients. There are two sets of location quotients: the first set defines, in the case of the Ogden Metropolitan Area, the ratio of the percentage employed in the Ogden Metropolitan Area to the percentage employed in Utah in the same classification. For the State of Utah, the location quotient defines the percentage employed in Utah to the percentage employed in the United States in the same classification.

Location quotients have usually been used to identify industries which are oriented towards the export market. However, they have been differently applied in the present study. Variations in the quotient throughout the base period have been used to define trends in the role played by the local area in the State economy and trends in the role played by the State economy in the national economy. To

TABLE 4

PERCENTAGE DISTRIBUTION OF CLASSIFIED WORKERS BY MAJOR CATEGORIES
OGDEN METROPOLITAN AREA, UTAH AND UNITED STATES
ACTUAL 1952 to 1960; PROJECTED 1965, 1970, 1975, 1980

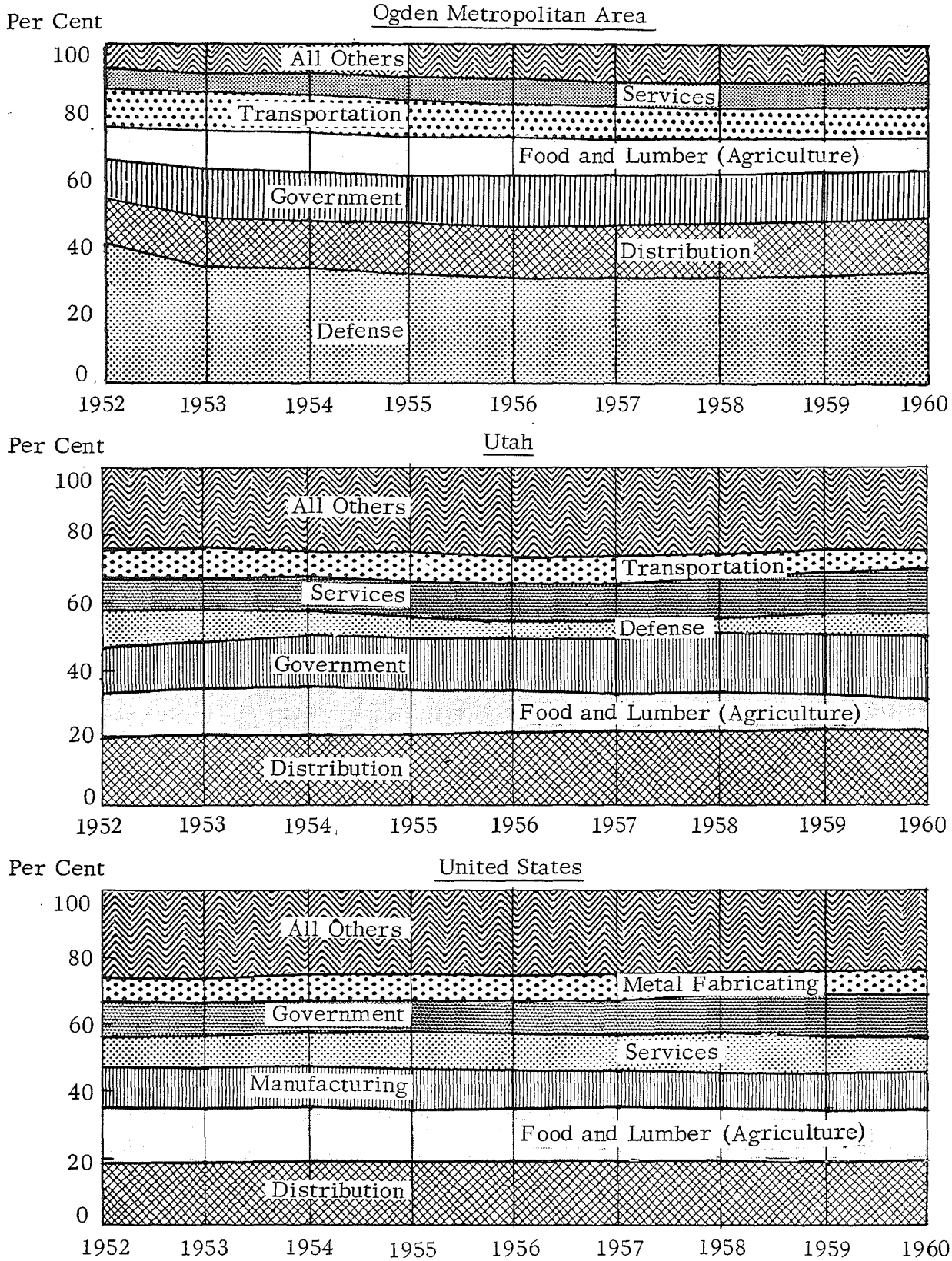
		1952	1953	1954	1955	1956	1957	1958	1959	1960	1965	1970	1975	1980
							Ogden Metropolitan Area							
I.	Food and Lumber: Extraction and Processing	10.3	10.9	11.4	11.3	11.0	11.0	9.9	9.4	8.9	7.5	6.1	5.6	5.0
II.	Energy and Fuels	0.6	0.7	0.8	0.8	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5
III.	Primary Metals: Mining and Closely Related Processing	a	a	0.1	0.1	0.1	0.1	a	a	a	a	a	a	a
IV.	Nonmetallic Minerals and Chemical Products	a	a	a	a	a	a	a	a	a	a	a	a	a
V.	Metal Fabrication	0.7	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.1	1.2	1.3	1.6	1.8
VI.	Defense	40.8	34.4	33.4	31.7	30.4	30.6	31.6	32.4	32.5	34.1	35.2	31.9	28.7
VII.	Other Manufacturing	1.8	1.9	2.0	2.1	2.0	2.0	2.6	2.6	2.8	2.9	3.1	3.4	3.7
VIII.	Construction	3.3	3.4	3.0	4.1	4.7	4.1	4.5	4.6	4.4	4.2	4.0	4.0	4.0
IX.	Government	11.2	15.0	14.1	13.6	14.8	15.4	14.8	14.8	14.8	15.8	16.5	18.2	19.9
X.	Transportation and Communication	10.8	10.9	11.0	11.0	10.4	10.1	9.2	9.2	9.0	7.4	6.1	5.5	5.0
XI.	Distribution	13.3	14.4	15.1	15.7	16.2	16.3	16.0	15.8	16.4	16.4	16.8	18.1	19.3
XII.	Finance	1.4	1.6	1.8	2.0	1.9	2.0	2.1	2.2	2.1	2.4	2.7	3.0	3.3
XIII.	Services	5.6	5.9	6.5	6.8	6.7	6.8	7.3	7.1	7.3	7.3	7.5	8.1	8.6
	TOTAL	99.7	99.9	100.1	100.1	100.0	100.2	99.9	99.9	100.0	99.8	99.9	99.9	99.8
							Utah							
I.	Food and Lumber: Extraction and Processing	14.5	14.7	14.4	13.9	13.1	12.5	12.3	11.6	11.1	9.3	7.6	6.7	5.8
II.	Energy and Fuels	3.6	3.8	3.6	3.3	3.4	3.8	3.6	3.3	3.1	2.8	2.5	2.3	2.0
III.	Primary Metals: Mining and Closely Related Processing	6.9	7.0	7.0	7.5	7.7	7.5	6.2	5.2	5.8	5.1	4.4	3.9	3.3
IV.	Nonmetallic Minerals and Chemical Products	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.0	1.1	1.3	1.6
V.	Metal Fabrication	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.0	2.0	2.2	2.3	2.5	2.7
VI.	Defense	12.0	9.2	8.2	7.7	7.2	7.0	7.8	9.0	9.3	10.3	11.1	9.7	8.4
VII.	Other Manufacturing	3.2	3.3	3.1	3.1	3.2	3.1	3.1	3.1	3.2	3.3	3.3	3.5	3.6
VIII.	Construction	5.0	4.6	4.9	5.8	6.2	5.7	5.7	5.8	5.3	5.2	4.8	4.6	4.3
IX.	Government	12.2	13.8	14.0	13.7	14.0	14.6	15.2	15.3	15.6	16.6	17.9	19.6	21.2
X.	Transportation and Communication	8.4	8.5	8.1	7.9	7.6	7.4	7.1	6.9	6.5	5.8	5.0	4.4	3.8
XI.	Distribution	20.0	20.4	21.0	20.8	21.1	21.2	21.5	22.0	22.0	22.0	22.1	22.4	22.5
XII.	Finance	3.0	3.1	3.5	3.7	3.6	3.7	3.8	4.0	3.9	4.6	4.9	5.2	5.5
XIII.	Services	9.1	9.4	9.8	10.0	10.0	10.3	10.6	11.0	11.2	12.0	13.0	14.1	15.2
	TOTAL	100.0	100.0	100.0	99.9	99.9	99.7	99.9	100.0	99.8	100.2	100.0	100.2	100.0
							United States							
I.	Food and Lumber: Extraction and Processing	17.0	16.3	16.4	16.3	15.6	14.8	14.6	14.2	13.8	12.2	10.6	9.3	8.2
II.	Energy and Fuels	2.7	2.6	2.6	2.5	2.5	2.5	2.4	2.3	2.2	2.0	1.8	1.7	1.5
III.	Primary Metals: Mining and Closely Related Processing	1.8	2.0	1.8	1.9	1.9	1.9	1.7	1.6	1.7	1.6	1.5	1.4	1.4
IV.	Nonmetallic Minerals and Chemical Products	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.0
V.	Metal Fabrication	7.4	7.7	7.0	7.2	7.2	7.2	6.4	6.7	6.8	6.4	6.0	5.7	5.4
VI.	Defense	4.4	4.7	4.3	4.1	4.1	4.2	4.0	3.9	3.7	3.5	3.2	2.9	2.7
VII.	Other Manufacturing	12.3	12.6	12.1	12.1	12.0	11.9	11.6	11.9	11.9	11.5	11.2	10.5	10.5
VIII.	Construction	4.8	4.7	4.7	4.9	5.0	4.8	4.7	4.8	4.7	4.7	4.7	4.6	4.6
IX.	Government	9.5	9.4	10.0	10.0	10.4	11.0	12.0	12.2	12.6	14.2	15.9	17.0	17.3
X.	Transportation and Communication	6.6	6.5	6.2	6.1	6.1	6.0	5.8	5.7	5.6	5.2	4.8	4.4	4.1
XI.	Distribution	18.6	18.6	19.1	19.0	19.2	19.3	19.7	19.6	19.8	20.3	20.6	20.9	21.4
XII.	Finance	3.5	3.6	3.9	3.9	3.9	4.0	4.2	4.2	4.2	4.7	5.1	5.6	6.1
XIII.	Services	9.8	9.7	10.3	10.6	10.5	10.8	11.3	11.2	11.3	12.1	12.9	13.8	14.8
	TOTAL	100.0	100.0	100.0	100.2	100.0	100.0	100.0	100.0	100.0	100.2	100.1	99.7	100.0

[a]Less than 0.05 per cent.

Source: Years 1952 to 1960 computed from Tables 1, 2, 3; years 1965 to 1980 from Tables 18, 19, 20.

CHART 1

PERCENTAGE DISTRIBUTION OF CLASSIFIED WORKERS
BY MAJOR CATEGORIES, 1952 TO 1960



Source: Table 4.

the extent that the comparison of ratios leads to a conclusion that the local area is playing a changing role with respect to the State, the direction of change is used as one of the criteria for projecting future developments. The same considerations are used in the case of the relationship between the State and the national economy.

The information is summarized in Tables 5 and 6. Table 5 is entitled Comparison of the Relative Importance of Industrial Categories in the Ogden Metropolitan Area With the Same Categories in Utah (Location Quotients) Actual 1952-1960; Projected 1965, 1970, 1975 and 1980. It is to be interpreted as follows: In the first column the name of the major industry classification is given. The subsequent columns are headed by the date of the observation. The last four columns contain for 1965, 1970, 1975 and 1980 the projections which will be discussed below. Under each of the years there appears a fraction opposite the name of the major industry classification. The numerator of the fraction is the percentage of total classified workers in the local area employed in the designated category; the denominator of the fraction is the percentage of total classified workers in the State of Utah employed in the designated category. The number resulting from performing the division and shown to the right of the fraction is the location quotient.

For example, opposite VI--Defense and under 1960, it is noted that 32.5 per cent of the classified employees in the local area worked in defense as compared with 9.3 per cent of the classified workers in Utah. Hence, the percentage of workers employed in the local area was 3.49 times the percentage employed in Utah. The last statement implies that the concentration of workers in the local area in defense was much higher than in the State as a whole.

Table 6, entitled Comparison of the Relative Importance of Industrial Categories in Utah with the Same Categories in the United States (Location Quotient) Actual 1952-1960; Projected 1965, 1970, 1975 and 1980, may be interpreted in the same fashion.

The next step in the analysis of the basic data was to examine the changes which occurred over time. The first approach was to compute the annual percentage change for each category for each level of government. The percentage changes were computed by taking the given year as a percentage of the preceding year. The average of the percentage changes was then determined. These results are given in Table 7 under the column headings 1952-1953, 1953-1954, etc. The column headed N=8 is the average of the percentage changes.

As mentioned above, both the post-Korean adjustment and the 1957 recession affected many of the series dealt with in the present study; it was decided to test the averages by eliminating the widest deviations which occurred. So the average percentage changes were calculated first, by removing the deviation in the annual observations which departed by the greatest percentage amount from the average (Table 7 column headed N=7), and second, by removing the two annual observations departing by the greatest percentage amount from the annual average (Table 7 column headed N=6).

Two other statistics were developed from these percentage data: first, the compound growth rate was computed from 1952 to 1960 (Table 7 column headed 1952-1960), and second, the compound growth rate was computed from 1954 to 1960 (Table 7 column headed 1954-1960). The selection of the 1954 data was determined by an investigation of a number of economic series such as bank clearings, kilowatt-

TABLE 5

COMPARISON OF THE RELATIVE IMPORTANCE OF INDUSTRIAL CATEGORIES IN THE OGDEN METROPOLITAN AREA WITH THE SAME CATEGORIES IN UTAH (LOCATION QUOTIENTS)
ACTUAL, 1952-1960; PROJECTED, 1965, 1970, 1975, 1980

	Category	1952		1953		1954		1955		1956		1957		1958	
		Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.
I.	Food and Lumber: Extraction and Processing														
	% O.M.A. / % Utah	10.3 / 14.5	0.71	10.9 / 14.7	0.74	11.4 / 14.4	0.79	11.3 / 14.0	0.81	11.0 / 13.1	0.84	11.0 / 12.5	0.88	9.9 / 12.3	0.80
II.	Energy and Fuels														
	% O.M.A. / % Utah	0.6 / 3.6	0.17	0.7 / 3.8	0.18	0.8 / 3.6	0.22	0.8 / 3.3	0.24	0.9 / 3.4	0.26	0.8 / 3.8	0.21	0.8 / 3.6	0.22
III.	Primary Metals: Mining and Closely Related Processing														
	% O.M.A. / % Utah	0.01 / 6.9	0.001	0.03 / 7.0	0.004	0.1 / 7.0	0.01	0.1 / 7.5	0.01	0.1 / 7.7	0.01	0.1 / 7.5	0.01	0.03 / 6.2	0.004
IV.	Nonmetallic Minerals and Chemical Products														
	% O.M.A. / % Utah	0.02 / 0.60	0.03	0.01 / 0.60	0.02	0.02 / 0.70	0.03	0.02 / 0.70	0.03	0.02 / 0.80	0.03	0.02 / 0.80	0.03	0.04 / 0.80	0.05
V.	Metal Fabrication														
	% O.M.A. / % Utah	0.7 / 1.5	0.47	0.8 / 1.6	0.50	0.8 / 1.7	0.47	0.9 / 1.8	0.50	0.9 / 2.0	0.45	1.0 / 2.1	0.48	1.1 / 2.2	0.50
VI.	Defense														
	% O.M.A. / % Utah	40.8 / 12.0	3.40	34.4 / 9.2	3.74	33.4 / 8.2	4.27	31.7 / 7.7	4.12	30.4 / 7.2	4.22	30.6 / 7.0	4.37	31.6 / 7.8	4.05
VII.	Other Manufacturing														
	% O.M.A. / % Utah	1.8 / 3.2	0.56	1.9 / 3.3	0.58	2.0 / 3.1	0.65	2.1 / 3.1	0.68	2.0 / 3.2	0.63	2.0 / 3.1	0.65	2.6 / 3.1	0.84
VIII.	Construction														
	% O.M.A. / % Utah	3.3 / 5.0	0.66	3.4 / 4.6	0.74	3.0 / 4.9	0.61	4.1 / 5.8	0.71	4.7 / 6.2	0.76	4.1 / 5.7	0.72	4.5 / 5.7	0.79
IX.	Government														
	% O.M.A. / % Utah	11.2 / 12.2	0.92	15.0 / 13.8	1.09	14.1 / 14.0	1.01	13.6 / 13.7	0.99	14.8 / 14.0	1.05	15.4 / 14.6	1.05	14.8 / 15.2	0.97
X.	Transportation and Communication														
	% O.M.A. / % Utah	10.8 / 8.4	1.29	10.9 / 8.5	1.28	11.0 / 8.1	1.36	11.0 / 7.9	1.39	10.4 / 7.6	1.37	10.1 / 7.4	1.36	9.2 / 7.1	1.30
XI.	Distribution														
	% O.M.A. / % Utah	13.3 / 20.0	0.67	14.4 / 20.4	0.71	15.1 / 21.0	0.72	15.7 / 20.8	0.75	16.2 / 21.1	0.77	16.3 / 21.2	0.77	16.0 / 21.5	0.74
XII.	Finance														
	% O.M.A. / % Utah	1.4 / 3.0	0.47	1.6 / 3.1	0.52	1.8 / 3.5	0.51	2.0 / 3.7	0.54	1.9 / 3.6	0.53	2.0 / 3.7	0.54	2.1 / 3.8	0.55
XIII.	Services														
	% O.M.A. / % Utah	5.6 / 9.1	0.62	5.9 / 9.4	0.63	6.5 / 9.8	0.66	6.8 / 10.0	0.68	6.7 / 10.0	0.67	6.8 / 10.3	0.66	7.3 / 10.6	0.69

TABLE 5 (Cont'd)

COMPARISON OF THE RELATIVE IMPORTANCE OF INDUSTRIAL CATEGORIES IN THE OGDEN METROPOLITAN AREA WITH THE SAME CATEGORIES IN UTAH (LOCATION QUOTIENTS)
ACTUAL, 1952-1960; PROJECTED 1965, 1970, 1975, 1980

	Category	1959 Ratio	1959 L.Q.	1960 Ratio	1960 L.Q.	1965 Ratio	1965 L.Q.	1970 Ratio	1970 L.Q.	1975 Ratio	1975 L.Q.	1980 Ratio	1980 L.Q.
I.	Food and Lumber: Extraction and Processing												
	% O.M.A. / % Utah	9.4 / 11.6	0.81	8.9 / 11.1	0.80	7.5 / 9.3	0.81	6.1 / 7.6	0.80	5.6 / 6.7	0.84	5.0 / 5.8	0.86
II.	Energy and Fuels												
	% O.M.A. / % Utah	0.7 / 3.3	0.21	0.7 / 3.1	0.23	0.6 / 2.8	0.21	0.6 / 2.5	0.24	0.5 / 2.3	0.22	0.5 / 2.0	0.25
III.	Primary Metals: Mining and Closely Related Processing												
	% O.M.A. / % Utah	0.03 / 5.2	0.005	0.02 / 5.8	0.003	0.02 / 5.1	0.003	0.02 / 4.4	0.004	0.02 / 3.9	0.005	0.02 / 3.3	0.006
IV.	Nonmetallic Minerals and Chemical Products												
	% O.M.A. / % Utah	0.04 / 0.80	0.05	0.04 / 0.80	0.05	0.04 / 0.98	0.04	0.04 / 1.1	0.04	0.04 / 1.3	0.03	0.04 / 1.6	0.025
V.	Metal Fabrication												
	% O.M.A. / % Utah	1.1 / 2.0	0.55	1.1 / 2.0	0.55	1.2 / 2.2	0.55	1.3 / 2.3	0.57	1.6 / 2.5	0.64	1.8 / 2.7	0.67
VI.	Defense												
	% O.M.A. / % Utah	32.4 / 9.0	3.60	32.5 / 9.3	3.49	34.1 / 10.3	3.31	35.2 / 11.1	3.17	31.9 / 9.7	3.29	28.7 / 8.4	3.42
VII.	Other Manufacturing												
	% O.M.A. / % Utah	2.6 / 3.1	0.84	2.8 / 3.2	0.88	2.9 / 3.3	0.88	3.1 / 3.3	0.94	3.4 / 3.5	0.97	3.7 / 3.6	1.03
VIII.	Construction												
	% O.M.A. / % Utah	4.6 / 5.8	0.79	4.4 / 5.3	0.83	4.2 / 5.1	0.82	4.0 / 4.6	0.87	4.0 / 4.2	0.95	4.0 / 3.9	1.03
IX.	Government												
	% O.M.A. / % Utah	14.8 / 15.3	0.97	14.8 / 15.6	0.95	15.8 / 16.6	0.95	16.5 / 17.9	0.92	18.2 / 19.5	0.93	19.9 / 21.2	0.94
X.	Transportation and Communication												
	% O.M.A. / % Utah	9.2 / 6.9	1.33	9.0 / 6.5	1.38	7.4 / 5.8	1.28	6.1 / 5.0	1.22	5.5 / 4.3	1.28	5.0 / 3.8	1.32
XI.	Distribution												
	% O.M.A. / % Utah	15.8 / 22.0	0.72	16.4 / 22.0	0.75	16.4 / 22.0	0.75	16.8 / 22.1	0.76	18.1 / 22.4	0.81	19.3 / 22.5	0.86
XII.	Finance												
	% O.M.A. / % Utah	2.2 / 4.0	0.55	2.1 / 3.9	0.54	2.4 / 4.6	0.52	2.7 / 4.9	0.55	3.0 / 5.2	0.58	3.3 / 5.5	0.60
XIII.	Services												
	% O.M.A. / % Utah	7.1 / 11.0	0.65	7.3 / 11.2	0.65	7.3 / 12.0	0.61	7.5 / 13.0	0.58	8.1 / 14.1	0.57	8.6 / 15.3	0.56

Source: Percentages from Table 4.

TABLE 6

COMPARISON OF THE RELATIVE IMPORTANCE OF INDUSTRIAL CATEGORIES IN UTAH WITH THE SAME CATEGORIES IN THE UNITED STATES (LOCATION QUOTIENTS)
ACTUAL, 1952-1960; PROJECTED, 1965, 970, 1975, 1980

	Category	1952		1953		1954		1955		1956		1957		19 8	
		Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L Q	Ratio	L.Q.	Ra o	L.Q.
I.	Food and Lumber: Extraction and Processing														
	% Utah / % U.S.	14.5 / 17.0	.85	14.7 / 16.3	.90	14.4 / 16.4	.88	**13.9 / 16.3**	.85	13.1 / 15.6	84	12 5 / 14 8	.84	12.3 / 14 6	.84
II.	Energy and Fuels														
	% Utah / % U.S.	3.6 / 2.7	1.33	3.8 / 2.6	1.46	3.6 / 2.6	1.38	3.3 / 2.5	1.32	3.4 / 2.5	1. 6	.8 / 2 5	1.52	3 6 / 2 4	1.50
III.	Primary Metals: Mining and Closely Related Processing														
	% Utah / % U.S.	6.9 / 1.8	3.83	7 0 / 2 0	3.50	7.0 / 1.8	3.89	7.5 / 1.9	3.95	7.7 / 1.9	4 05	.5 / 1 9	3.95	6 2 / 1.7	3.65
IV.	Nonmetallic Minerals and Chemical Products														
	% Utah / % U. S.	0.55 / 1.6	.34	0 58 / 1.6	.36	0.65 / 1.6	. 1	0.67 / 1.6	.42	0.74 / 1.6	46	0.81 / 1.6	.51	0 .2 / 1 6	.51
V.	Metal Fabrication														
	% Utah / % U. S.	1.5 / 7.4	.20	1 6 / 7.7	.21	1.7 / 7.0	.24	1.8 / 7.2	.25	2.0 / 7 2	.2	2 1 / 7.2	.29	2 / 6.4	.34
VI.	Defense														
	% Utah / % U. S.	12.0 / 4.4	2.73	9.2 / 4.7	1.96	8.2 / 4.3	1.91	7.7 / 4.1	1 88	7.2 / 4.1	1.7o	7.0 / 4.2	1.67	7.8 / 4.0	1.95
VII.	Other Manufacturing														
	% Utah / % U.S.	3.2 / 12.3	.26	3.3 / 12.6	.26	3.1 / 12.1	.26	3.1 / 12.1	.26	3.2 / 12.0	.27	3.1 / 11.9	.26	3.1 / 11.6	.27
VIII.	Construction														
	% Utah / % U. S.	5.0 / 4.8	1 04	4.6 / 4.7	.98	4.9 / 4.7	1.04	5.8 / 4.9	1.18	6.2 / 5.0	1.24	5 7 / 4.8	1.19	5 7 / 4 7	1.21
IX.	Government														
	% Utah / % U.S.	12.2 / 9.5	1.28	13.8 / 9.4	1.47	14.0 / 10.0	1.40	13.7 / 10.0	1.37	14.0 / 10.4	1.34	14.6 / 11.0	1.33	15.2 / 12.0	1.27
X.	Transportation and Communication														
	% Utah / % U.S.	8.4 / 6.6	1.27	8.5 / 6.5	1.31	8.1 / 6.2	1.31	7.9 / 6.1	1.30	7.6 / 6.1	1.25	7.4 / 6 0	1.23	7.1 / 5 8	1.22
XI	Distribution														
	% Utah / % U.S.	20.0 / 18.6	1.08	20.4 / 18.6	1.10	21.0 / 19.1	1.10	20.8 / 19.0	1.10	21.1 / 19.2	1.10	21.2 / 19.3	1.10	21.5 / 19.7	1.09
XII.	Finance														
	% Utah / % U.S.	3.0 / 3.5	.86	3.1 / 3 6	.86	3.5 / 3.9	.90	3.7 / 3.9	.95	3.6 / 3.9	.92	3.7 / 4.0	.92	3.8 / 4.2	.91
XIII.	Services														
	% Utah / % U.S.	9.1 / 9.8	.93	9.4 / 9.7	.97	9.8 / 10.3	.95	10.0 / 10.6	94	10.0 / 10.5	.95	10.3 / 10.8	.95	10 6 / 11 3	.94

TABLE 6 (Cont'd)

COMPARISON OF THE RELATIVE IMPORTANCE OF INDUSTRIAL CATEGORIES IN UTAH WITH THE SAME CATEGORIES IN THE UNITED STATES (LOCATION QUOTIENTS)
ACTUAL, 1952 - 1960; PROJECTED, 1965, 1970, 1975, 1980

	Category	1959		1960		1965		1970		1975		1980	
		Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.
I.	Food and Lumber: Extraction and Processing												
	% Utah / % U.S.	11.6 / 14.2	.82	11.1 / 13.8	.80	9.3 / 12.2	.76	7.6 / 10.6	.72	6.7 / 9.3	.72	5.8 / 8.2	.71
II.	Energy and Fuels												
	% Utah / % U.S.	3.3 / 2.3	1.44	3.1 / 2.2	1.41	2.8 / 2.0	1.40	2.5 / 1.8	1.39	2.3 / 1.7	1.35	2.0 / 1.5	1.33
III.	Primary Metals: Mining and Closely Related Processing												
	% Utah / % U.S.	5.2 / 1.6	3.25	5.8 / 1.7	3.41	5.1 / 1.6	3.19	4.4 / 1.5	2.93	3.9 / 1.4	2.79	3.4 / 1.4	2.43
IV.	Nonmetallic Minerals and Chemical Products												
	% Utah / % U.S.	0.77 / 1.7	.45	0.76 / 1.7	.45	1.0 / 1.8	.56	1.1 / 1.8	.61	1.3 / 1.9	.68	1.6 / 2.0	.80
V.	Metal Fabrication												
	% Utah / % U.S.	2.0 / 6.7	.30	2.0 / 6.8	.29	2.2 / 6.4	.34	2.3 / 6.0	.38	2.5 / 5.7	.44	2.7 / 5.4	.50
VI.	Defense												
	% Utah / % U.S.	9.0 / 3.9	2.31	9.3 / 3.7	2.51	10.3 / 3.5	2.94	11.1 / 3.2	3.47	9.7 / 2.9	3.34	8.4 / 2.7	3.11
VII.	Other Manufacturing												
	% Utah / % U.S.	3.1 / 11.9	.26	3.2 / 11.9	.27	3.3 / 11.5	.29	3.3 / 11.2	.29	3.5 / 10.5	.32	3.6 / 10.5	.34
VIII.	Construction												
	% Utah / % U.S.	5.8 / 4.8	1.21	5.3 / 4.7	1.13	5.2 / 4.7	1.11	4.8 / 4.7	1.02	4.6 / 4.6	1.00	4.3 / 4.6	.93
IX.	Government												
	% Utah / % U.S.	15.3 / 12.2	1.25	15.6 / 12.6	1.24	16.6 / 14.2	1.17	17.9 / 15.9	1.13	19.6 / 17.0	1.15	21.2 / 17.3	1.23
X.	Transportation and Communication												
	% Utah / % U.S.	6.9 / 5.7	1.21	6.5 / 5.6	1.16	5.8 / 5.2	1.12	5.0 / 4.8	1.04	4.4 / 4.4	1.00	3.8 / 4.1	.93
XI.	Distribution												
	% Utah / % U.S.	22.0 / 19.6	1.12	22.0 / 19.8	1.11	22.0 / 20.3	1.08	22.1 / 20.6	1.07	22.4 / 20.9	1.07	22.5 / 21.4	1.05
XII.	Finance												
	% Utah / % U.S.	4.0 / 4.2	.95	4.0 / 4.2	.95	4.6 / 4.7	.98	4.9 / 5.1	.96	5.2 / 5.6	.93	5.5 / 6.1	.90
XIII.	Services												
	% Utah / % U.S.	11.0 / 11.2	.98	11.2 / 11.3	1.00	12.0 / 12.1	.99	13.0 / 12.9	1.01	14.1 / 13.8	1.02	15.3 / 14.8	1.03

Source: Percentages from Table 4.

TABLE 7

ANNUAL PERCENTAGE CHANGES IN EMPLOYMENT OF CLASSIFIED WORKERS BY MAJOR CATEGORIES, 1952 TO 1960

Category	1952-1953	1953-1954	1954-1955	1955-1956	1956-1957	1957-1958	1958-1959	1959-1960	Average N = 8[a]	Average N = 7[b]	Average N = 6[c]	1952-1960[d]	1954-1960[e]
Ogden Metropolitan Area													
I. Food and Lumber: Extraction and Processing	1.5	- 5.5	1.2	- 0.4	- 0.8	- 6.9	1.0	- 2.6	- 1.6	- 0.8	f	- 1.6	- 1.5
II. Energy and Fuels	7.5	- 1.5	- 0.6	23.8	-15.7	1.8	- 4.1	- 3.6	1.0	3.3	4.6	0.4	- 0.4
III. Primary Metals: Mining and Closely Related Processing	220.0	62.5	26.9	84.8	-54.1	-50.0	- 7.2	- 7.7	34.4	7.9	18.2	11.6	-12.1
IV. Nonmetallic Minerals and Chemical Products	-25.0	16.7	14.3	12.5	11.1	90.0	-10.5	17.6	15.8	5.2	6.5	12.1	19.1
V. Metal Fabrication	0.8	- 2.0	8.6	1.1	15.9	5.2	9.0	9.2	6.0	4.6	5.7	5.8	8.0
VI. Defense	-18.9	-12.0	- 3.6	- 1.5	0.3	5.8	9.3	3.1	- 2.2	0.2	1.3	- 2.6	2.1
VII. Other Manufacturing	2.2	- 6.3	5.9	0.1	- 0.6	32.2	7.1	7.7	6.0	2.3	3.7	5.5	8.2
VIII. Construction	- 1.8	-20.7	40.2	19.3	-14.0	12.6	10.3	- 3.1	5.4	0.4	3.9	3.8	8.1
IX. Government	28.5	-15.2	- 0.9	11.0	3.5	- 1.0	5.8	3.5	4.4	1.0	3.7	3.8	3.6
X. Transportation and Communication	- 3.6	- 8.3	1.4	- 2.3	- 3.7	- 6.2	6.6	- 0.5	- 2.1	- 3.3	- 2.5	- 2.1	- 0.7
XI. Distribution	3.7	- 5.3	6.3	5.8	- 0.1	0.3	5.4	6.6	2.6	4.0	3.6	2.8	4.0
XII. Finance	7.0	2.7	11.3	- 2.4	5.6	7.0	10.0	2.0	5.4	6.5	5.7	5.3	5.5
XIII. Services	1.5	- 0.5	6.5	0.9	1.9	8.7	4.3	5.1	3.6	2.8	3.4	3.5	4.5
Total Classified Employees	- 4.0	- 9.5	1.9	2.7	- 0.4	2.2	6.6	2.8	0.3	1.7	0.9	0.2	2.6
Utah													
I. Food and Lumber: Extraction and Processing	2.3	- 4.3	1.7	- 2.3	- 3.0	- 1.7	- 1.2	- 1.5	- 1.3	- 1.8	-1.3	- 1.3	- 1.3
II. Energy and Fuels	5.2	- 8.6	- 0.9	6.5	12.5	- 4.1	- 6.6	0.1	0.5	- 1.2	0.0	0.3	1.1
III. Primary Metals: Mining and Closely Related Processing	3.7	- 2.9	12.0	6.8	- 0.2	-17.3	-13.0	15.1	0.5	3.1	1.1	- 0.1	- 0.2
IV. Nonmetallic Minerals and Chemical Products	6.3	9.3	8.7	13.8	11.2	1.7	- 2.1	2.1	6.4	7.6	6.6	6.3	5.8
V. Metal Fabrication	5.4	4.5	12.1	14.7	6.8	- 2.4	- 0.4	4.4	5.6	4.3	5.5	5.5	5.8
VI. Defense	-21.7	-13.1	- 1.5	- 5.1	- 0.7	10.9	19.8	7.9	- 0.4	2.6	- 0.3	- 1.0	5.2
VII. Other Manufacturing	4.8	- 8.7	7.7	5.2	0.4	- 0.7	4.4	7.2	2.5	4.1	3.6	2.4	4.0
VIII. Construction	- 4.9	2.0	26.3	9.2	- 4.7	- 0.1	5.8	- 4.9	3.6	0.3	1.2	3.1	4.8
IX. Government	14.4	- 1.0	3.1	5.0	7.0	4.0	4.8	6.0	5.4	4.1	5.0	5.5	5.0
X. Transportation and Communication	1.9	- 6.8	2.0	0.3	- 0.9	- 3.9	0.7	- 1.3	- 1.0	- 0.2	- 0.5	- 1.0	- 0.5
XI. Distribution	3.6	- 0.3	4.6	5.3	2.5	1.3	6.3	3.8	3.4	3.9	3.5	3.4	4.0
XII. Finance	7.4	7.0	11.4	3.5	2.5	4.7	6.1	4.7	5.9	5.1	5.6	5.9	5.4
XIII. Services	3.7	2.5	6.4	4.6	5.0	2.3	8.7	5.6	4.9	4.3	4.6	4.8	5.4
Total Classified Employees	1.6	- 2.8	5.3	3.6	1.9	0.2	4.1	3.8	2.2	2.9	2.5	2.2	3.1
United States													
I. Food and Lumber: Extraction and Processing	- 2.6	- 1.6	3.1	- 1.5	- 5.3	- 5.1	0.3	- 1.8	- 1.8	- 2.5	- 2.1	- 1.9	- 1.6
II. Energy and Fuels	- 2.0	- 4.4	- 0.1	3.5	0.5	- 5.3	- 2.8	- 2.2	- 1.6	- 2.3	- 1.8	- 1.6	- 1.1
III. Primary Metals: Mining and Closely Related Processing	11.1	- 9.4	8.4	2.2	1.4	-15.5	- 1.4	6.9	0.5	2.7	1.4	0.1	- 0.2
IV. Nonmetallic Minerals and Chemical Products	4.1	- 1.6	2.5	3.2	1.0	- 2.9	3.0	3.0	1.5	2.2	2.8	1.5	1.3
V. Metal Fabrication	6.6	-11.3	6.2	2.0	0.2	-13.6	7.8	2.1	0.0	1.9	4.2	- 0.3	0.5
VI. Defense	9.6	-10.0	- 2.4	3.3	1.7	- 7.6	0.5	- 3.5	- 1.0	- 2.6	- 1.3	- 1.3	- 1.3
VII. Other Manufacturing	4.2	- 5.9	3.3	2.0	- 1.2	- 5.2	5.1	1.1	0.4	1.3	2.4	0.3	0.8
VIII. Construction	0.4	- 1.9	6.4	6.1	- 4.1	- 5.7	4.5	0.2	0.7	1.6	0.9	0.6	1.1
IX. Government	0.8	4.3	3.3	6.5	6.0	5.1	3.7	5.1	4.4	4.9	4.6	4.3	5.0
X. Transportation and Communication	0.7	- 6.0	1.4	1.9	- 0.5	- 7.1	f	f	- 1.2	- 0.4	0.6	- 1.2	- 0.7
XI. Distribution	2.5	- 0.1	3.1	3.5	0.7	- 1.4	2.2	2.3	1.6	2.0	1.8	1.6	1.3
XII. Finance	3.5	4.7	4.6	4.0	1.7	1.1	2.1	2.5	3.0	3.3	3.1	3.0	2.7
XIII. Services	1.2	3.2	4.4	4.1	2.9	0.9	2.0	1.7	2.6	2.3	2.5	2.6	2.7
Total Classified Employees	2.0	- 2.3	3.4	2.8	0.1	- 3.4	2.5	1.4	0.8	1.4	2.0	0.8	1.1

[a] N = 8, average of the annual percentage changes.

[b] N = 7, average of the annual percentage changes less the greatest derivative from the mean.

[c] N = 6, average of the annual percentage changes less the two greatest derivatives from the mean.

[d] 1952-1960, compound growth rate 1952 to 1960.

[e] 1954-1960, compound growth rate 1954 to 1960.

[f] Slight change.

Source: Tables 1, 2, and 3.

hours generated, construction starts, etc., all of which indicated that 1954 was a relatively normal year and stood at the beginning of a growth trend which was only interrupted by the 1957 recession.

It is difficult through an examination of the percentage data to develop a clear idea of the relative importance of the major industry classifications. Relative importance is a necessary datum in developing an adequate picture of an economy. In the case of the present study, which is predicated on the stability of the economic patterns as observed in the past, it is necessary to explain in terms of exogeneous factors any shift in the relative importance of an industry group which occurs during the period of projection.

One way of approaching the problem of relating importance is through the use of a modified Diversification Index (DI). An analysis of the data which are summarized by the DI will also indicate the extent to which an economy is becoming more (or less) concentrated. The DI is constructed as follows. For each year and for each level of government the major industry classifications are arrayed in order of percentage importance from highest to lowest. The percentage of employment for each category is then cumulated. The DI is computed by subtracting the cumulated total from 700 and dividing by 600. These constants were used so that the results could be transformed onto a scale reading from 0 to 100. The DI is given in percentage terms. An example of the calculation of a DI for the Ogden Metropolitan Area for 1952 follows:

Classification	Array	Cumulative
VI. Defense	40.8	40.8
XI. Distribution	13.3	54.1
IX. Government	11.2	65.3
X. Transportation	10.8	76.1
I. Food and Lumber	10.3	86.4
XIII. Services	5.6	92.0
VIII. Construction	3.3	95.3
VII. Other Manufacturing	1.8	97.1
XII. Finance	1.4	98.5
V. Metal Fabrication	0.7	99.2
II. Energy and Fuels	0.6	99.8
IV. Nonmetallic Minerals	a	99.8
III. Primary Metals	a	99.8
Total		1,104.2

$$DI = \frac{1,104.2 - 700}{600} = 67.38$$

[a]Less than 0.05 per cent.

A DI = 0 is to be interpreted as a situation in which each of the major industry classifications has the same percentage of total employment. It is used as a benchmark for complete diversification. A DI = 100 will occur if all of the employment is concentrated in one major industry classification. Such a case may be interpreted as the absence of diversification. The range between zero and 100 gives some indication of the degree to which the economy is diversified (or, alternatively, concentrated). No particular significance may be attributed to any given index; the trend of the index over time indicates the tendency towards greater or less diversification from an initial date. Table 8 provides a schedule of the diversification indexes for each level by year. It includes the DI's for the projected periods computed from employment extrapolations. It may be noted, by way of comparison, that the Ogden Metropolitan Area, at present and in the future, is much more concentrated than either the State of Utah or the United States. This high concentration is due, of course, to the unusually large role of national defense

activities in the Ogden Metropolitan Area. The computations of the DI's are given in Appendix I.

There is another important use which can be made of the raw data from which the DI's are calculated. It is possible to observe the tendency toward concentration within any given number of the major industry groups. For example, it will be observed from an examination of the cumulative arrays in Table 9 for the three levels of government that the largest five major industry groups accounted for two-thirds to four-fifths of total classified employment. Again it may be noted that this percentage is substantially higher for the Ogden Metropolitan Area than for Utah and the United States.

TABLE 8

DIVERSIFICATION INDEXES

Year	Ogden Metropolitan Area	Utah	United States
1952	67.4	43.2	41.3
1953	64.7	43.3	40.7
1954	63.9	43.3	41.6
1955	62.3	42.2	41.7
1956	61.8	41.7	41.1
1957	62.6	42.5	40.8
1958	61.7	42.6	41.7
1959	62.1	43.7	41.7
1960	62.5	43.4	41.9
1965	63.2	44.5	42.8
1970	64.4	46.0	44.5
1975	63.2	47.6	45.9
1980	61.8	48.9	47.1

Source: Appendix I.

TABLE 9

CUMULATIVE PERCENTAGE OF CLASSIFIED EMPLOYMENT IN THE FIVE LARGEST CATEGORIES--OGDEN METROPOLITAN AREA, UTAH AND THE UNITED STATES--ACTUAL 1952-1960; PROJECTED 1965, 1970, 1975 AND 1980

Year	Ogden Metropolitan Area	Utah	United States
1952	84.4	67.8	67.2
1953	85.6	67.5	66.6
1954	85,0	67.4	68.0
1955	83.3	66.3	68.0
1956	82.8	65.9	67.7
1957	83.4	66.1	67.8
1958	81.5	67.4	69.2
1959	81.6	68.9	69.1
1960	81.6	69.1	69.4
1965	81.2	70.2	70.3
1970	82.1	71.7	61.2
1975	81.9	72.5	71.8
1980	81.5	73.2	72.2

Source: Appendix I.

A visual representation of the DI data reveals several important developments which can only imperfectly be comprehended from the indexes. In Charts 2, 3 and 4 for the three levels of government, 1954, 1956 and 1958 have been chosen for representative purposes. Along the abcissa the industry categories have been marked oof from I to XIII. Along the ordinate the cumulative percentage of total employment is marked off. Thus, the diversification chart for the Ogden Metropolitan Area, Chart 2, for 1954, shows that the largest category employed 33.4 per cent of the total

number of classified employees; the largest two categories, 48.5 per cent of the total; and the largest three, 62.6 per cent.

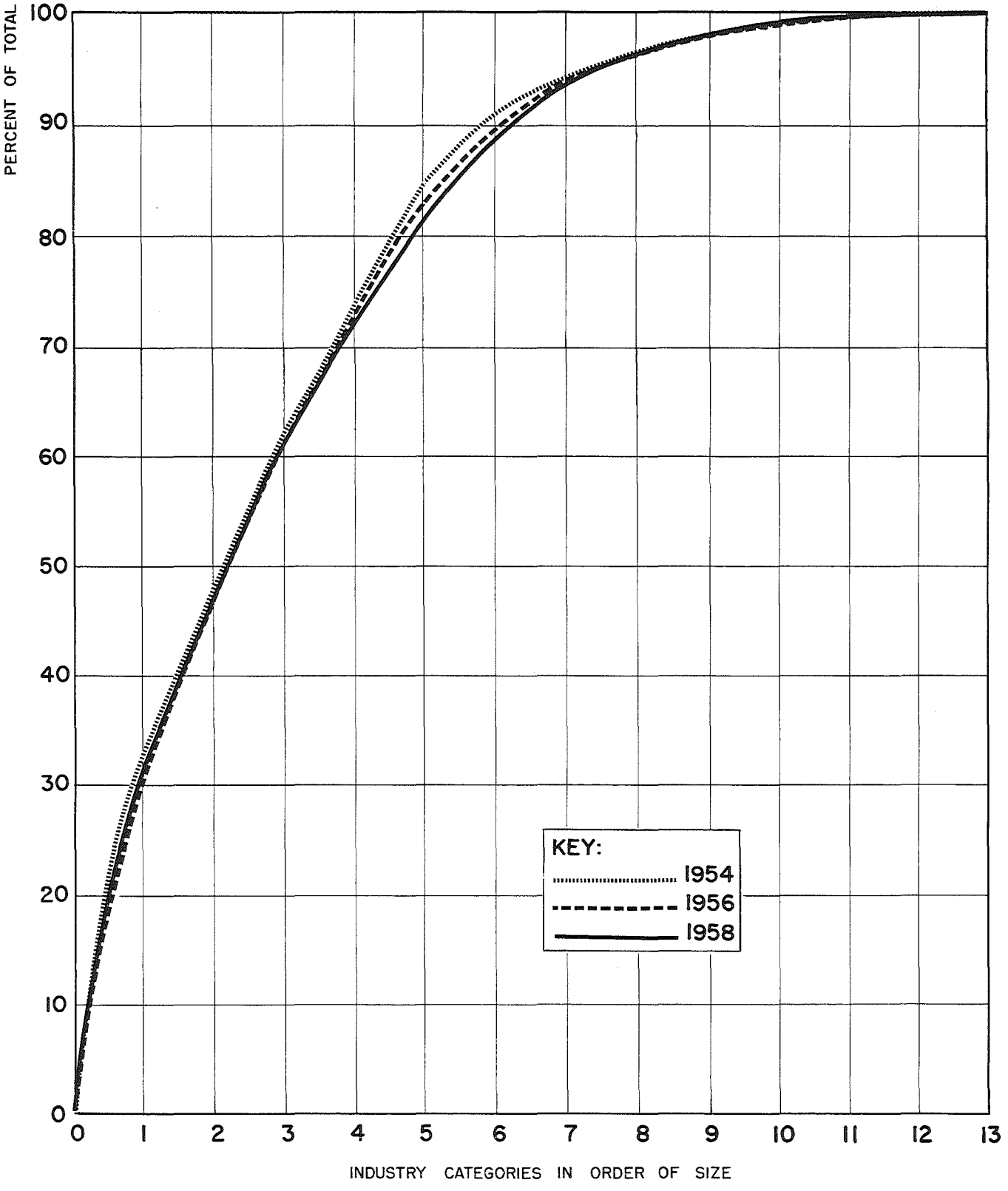
Diversification charts for the projections are also given at this point--Charts 5, 6, and 7. In each case the base is an average of 1959 and 1960 to avoid distortion from using only the one year. The different lines represent the base, 1970 and 1980 as indicated. It may be noticed at this point that the projections for Utah and the United States reflect the increased tendency towards concentration characteristics of maturing economies. This is not true of the Ogden Metropolitan Area, however, because of the assumption of no additional growth in defense activities after 1970.

Another technique was used to analyze the implication of the employment data for the base period, 1952-1960, which was especially fruitful in indicating underlying consistency of the data. In Tables 10 through 15 the major industry classifications are ranked in order of importance. The data are presented in two different ways. Tables 10, 11 and 12, entitled Industry Categories As a Per Cent of Total Classified Employment in Descending Order of Importance, give the industry classification in the body of the table by year by ranked order of importance. Thus in Table10, Category VI, Defense, is first in importance for the base period as well as the four projected years in the Ogden Metropolitan Area, whereas it is seen in Tables 11 and 12 that Category XI, Distribution, ranks first in both Utah and the United States.

The same data are presented in an alternative form in the three Tables, 13, 14 and 15, entitled The Order of Rank as a Per Cent of Total Classified Employment for Major Industry Classifications. For these tables the classifications are

CHART 2

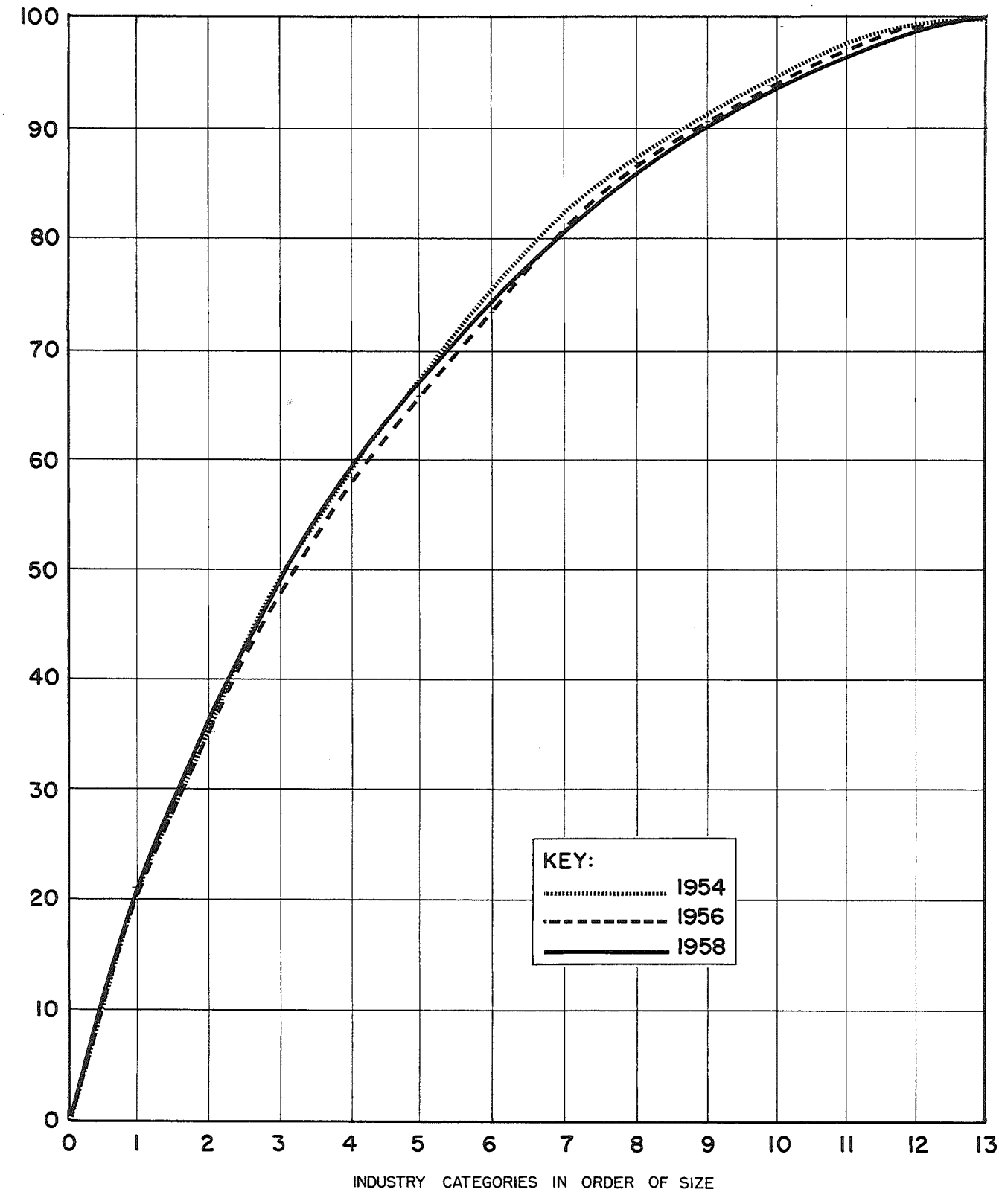
GRAPHICAL PRESENTATION OF INDUSTRY DIVERSIFICATION IN OGDEN METROPOLITAN AREA IN BASE PERIOD



SOURCE: TABLES 4 AND 10

CHART 3

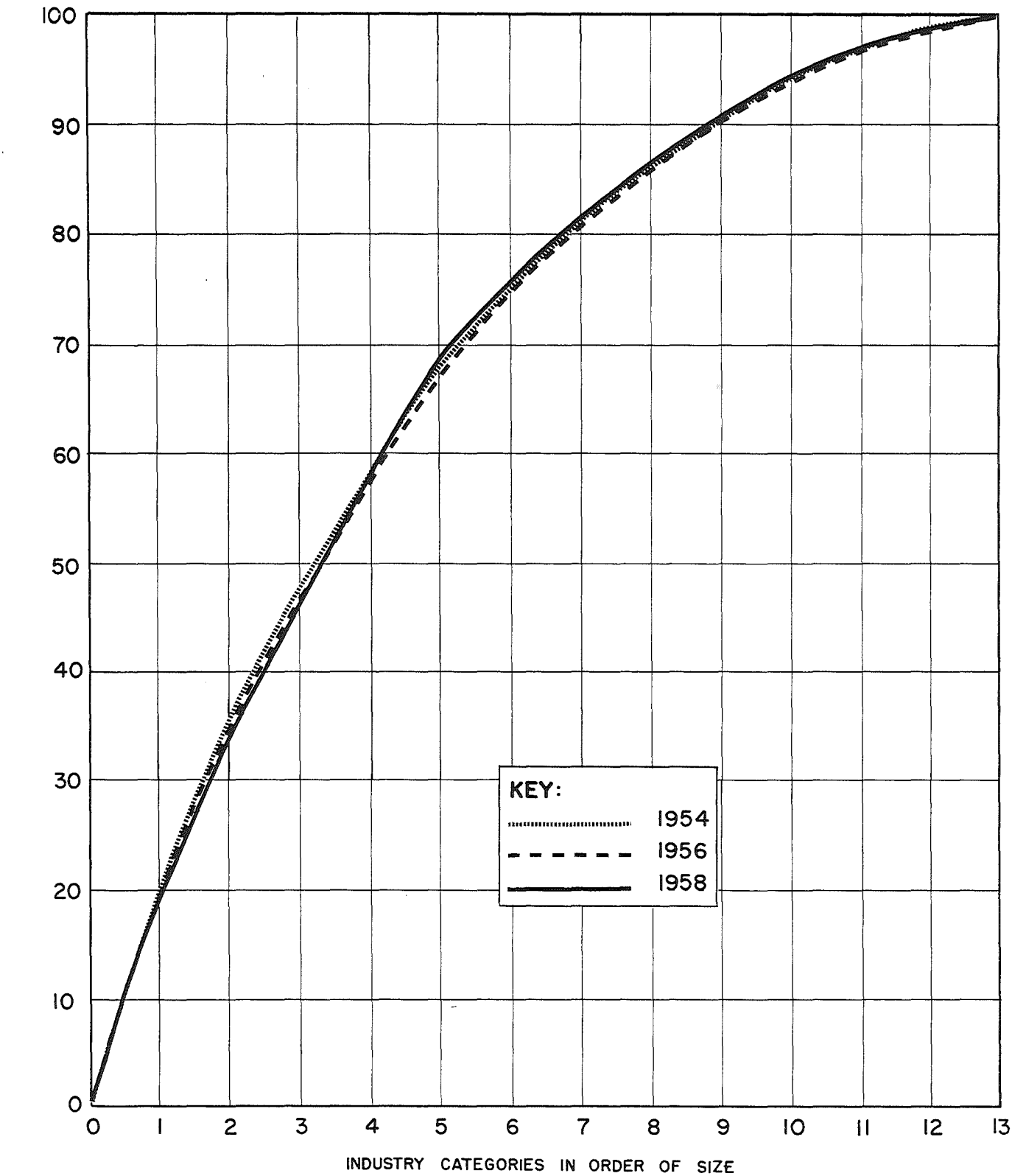
GRAPHICAL PRESENTATION OF INDUSTRY DIVERSIFICATION IN UTAH IN BASE PERIOD



SOURCE: TABLES 4 AND 11

CHART 4

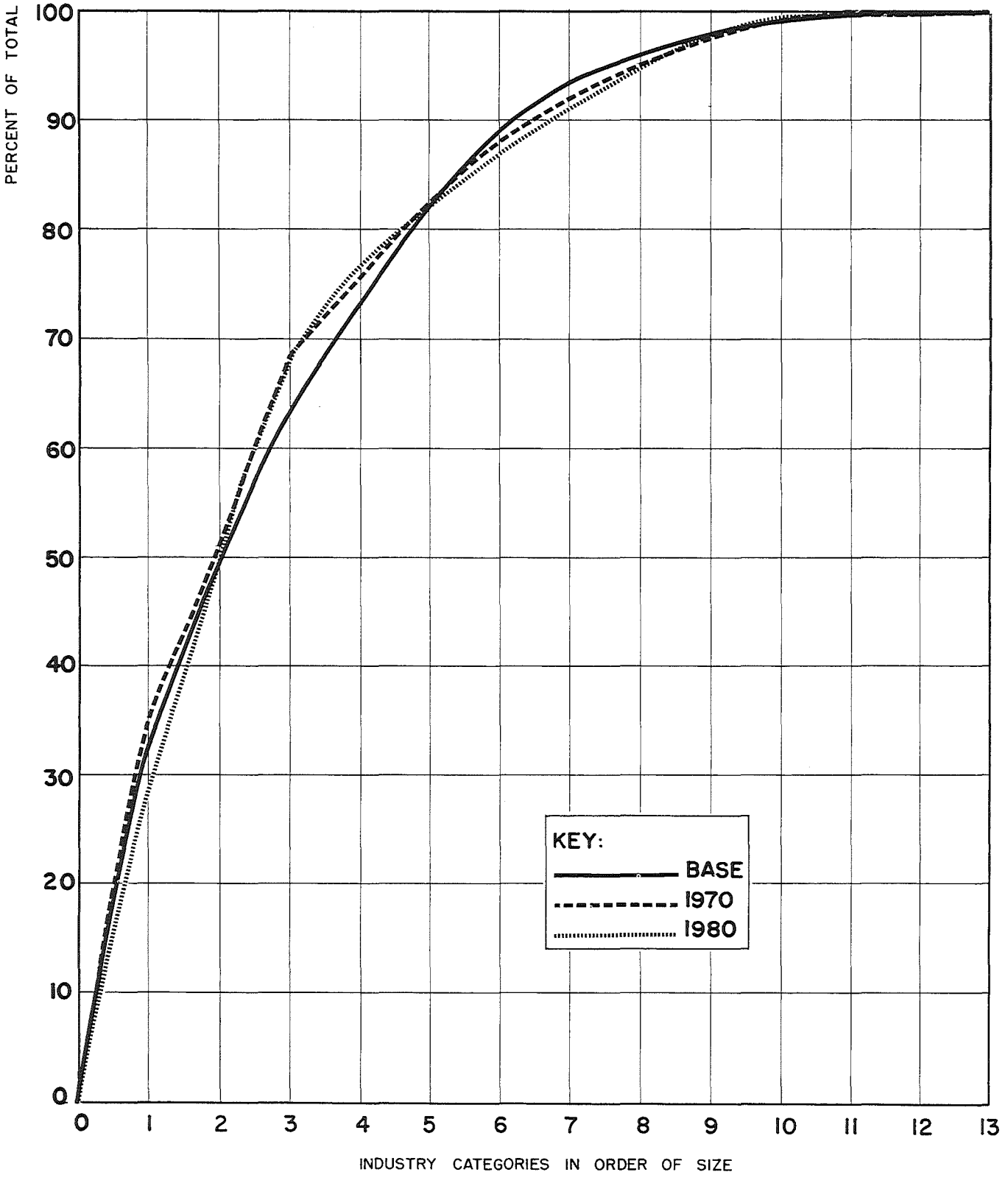
GRAPHICAL PRESENTATION OF INDUSTRY DIVERSIFICATION IN UNITED STATES IN BASE PERIOD



SOURCE: TABLES 4 AND 12

CHART 5

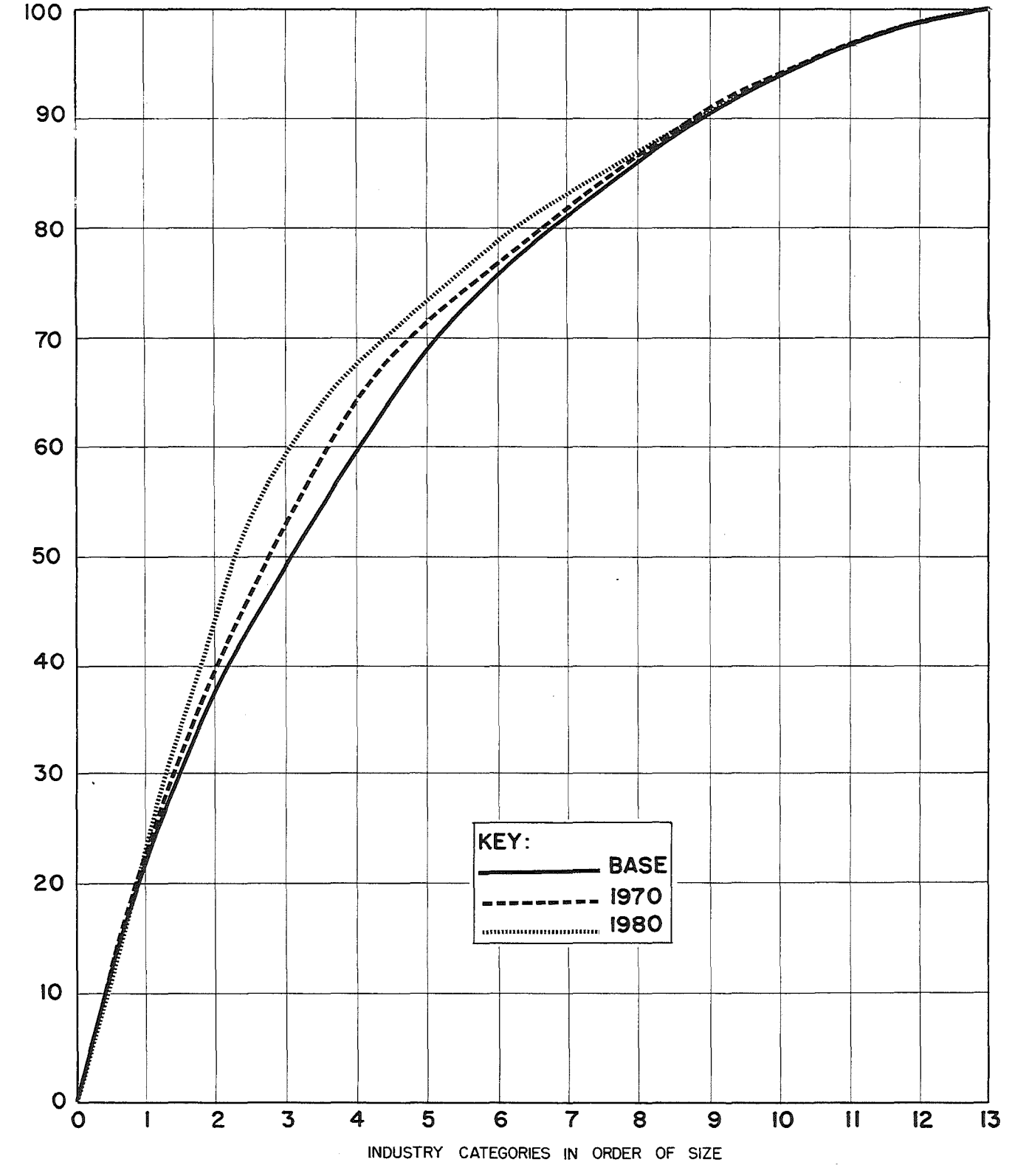
GRAPHICAL PRESENTATION OF INDUSTRY DIVERSIFICATION IN OGDEN METROPOLITAN AREA FOR THE PROJECTION



SOURCE: TABLES 4 AND 10

CHART 6

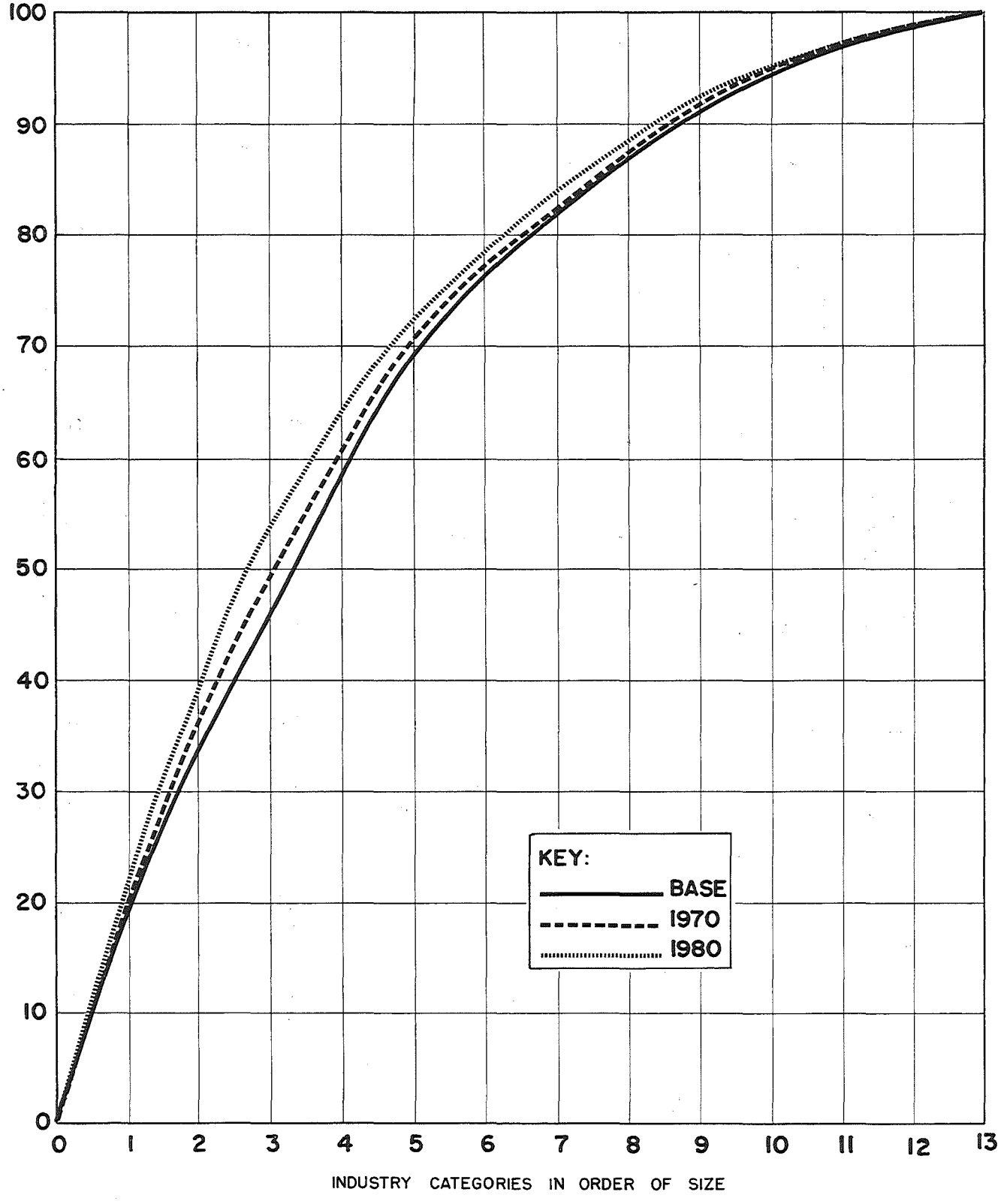
GRAPHICAL PRESENTATION OF INDUSTRY DIVERSIFICATION IN UTAH FOR THE PROJECTION



SOURCE: TABLES 4 AND 11

CHART 7

GRAPHICAL PRESENTATION OF INDUSTRY DIVERSIFICATION IN UNITED STATES FOR THE PROJECTION



SOURCE: TABLES 4 AND 12

TABLE 10

INDUSTRY CATEGORIES AS A PER CENT OF TOTAL CLASSIFIED EMPLOYMENT IN THE OGDEN METROPOLITAN AREA IN DESCENDING ORDER OF IMPORTANCE

Rank	1952	1953	1954	1955	1956	1957	1958	1959	1960	1965	1970	1975	1980
1	VI	VI	VI	VI	VI	VI	VI	VI	VI	VI	VI	VI	VI
2	XI	IX	XI	XI	XI	XI	XI	XI	XI	XI	XI	IX	IX
3	IX	XI	IX	IX	IX	IX	IX	IX	IX	IX	IX	XI	XI
4	X	X	I	I	I	I	I	I	X	I	XIII	XIII	XIII
5	I	I	X	X	X	X	X	X	I	X	I	I	I
6	XIII	XIII	XIII	XIII	XIII	XIII	XIII	XIII	XIII	XIII	X	X	X
7	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII
8	VII	VII	VII	VII	VII	VII	VII	VII	VII	VII	VII	VII	VII
9	XII	XII	XII	XII	XII	XII	XII	XII	XII	XII	XII	XII	XII
10	V	V	V	V	V	V	V	V	V	V	V	V	V
11	II	II	II	II	II	II	II	II	II	II	II	II	II
12	IV	III	III	III	III	III	IV	IV	IV	IV	IV	IV	IV
13	III	IV	IV	IV	IV	IV	III	III	III	III	III	III	III

Source: Table 4.

TABLE 11

INDUSTRY CATEGORIES AS A PER CENT OF TOTAL CLASSIFIED EMPLOYMENT IN UTAH
IN DESCENDING ORDER OF IMPORTANCE

Rank	1952	1953	1954	1955	1956	1957	1958	1959	1960	1965	1970	1975	1980
1	XI	XI	XI	XI	XI	XI	XI	XI	XI	XI	XI	XI	XI
2	I	I	IX	I	IX	IX	IX	IX	IX	IX	IX	IX	IX
3	IX	IX	I	IX	I	I	I	I	XIII	XIII	XIII	XIII	XIII
4	VI	XIII	XIII	XIII	XIII	XIII	XIII	XIII	I	VI	VI	VI	VI
5	XIII	VI	VI	X	III	III	VI	VI	VI	I	I	I	XII
6	X	X	X	VI	X	X	X	X	X	X	XII	XII	I
7	III	III	III	III	VI	VI	III	VIII	III	III	X	X	VIII
8	VIII	VIII	VIII	VIII	VIII	VIII	VIII	III	VIII	VIII	VIII	VIII	X
9	II	II	II	XII	XII	II	XII	XII	XII	XII	III	III	VII
10	VII	VII	XII	II	II	XII	II	II	VII	VII	VII	VII	III
11	XII	XII	VII	VII	VII	VII	VII	VII	II	II	II	V	V
12	V	V	V	V	V	V	V	V	V	V	V	II	II
13	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV

Source: Table 4.

TABLE 12

INDUSTRY CATEGORIES AS A PER CENT OF TOTAL CLASSIFIED EMPLOYMENT IN THE UNITED STATES IN DESCENDING ORDER OF IMPORTANCE

Rank	1952	1953	1954	1955	1956	1957	1958	1959	1960	1965	1970	1975	1980
1	XI	XI	XI	XI	XI	XI	XI	XI	XI	XI	XI	XI	XI
2	I	I	I	I	I	I	I	I	I	IX	IX	IX	VIII
3	VII	VII	VII	VII	VII	VII	IX	IX	IX	I	XIII	XIII	XIII
4	XIII	XIII	XIII	XIII	XIII	IX	VII	VII	VII	XIII	VII	VII	VII
5	IX	IX	IX	IX	IX	XIII	XIII	XIII	XIII	VII	I	I	I
6	V	V	V	V	V	V	V	V	V	V	V	V	XII
7	X	X	X	X	X	X	X	X	X	X	XII	XII	V
8	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII	VIII	X	VIII	VIII
9	VI	VI	VI	VI	VI	VI	XII	XII	XII	XII	VIII	X	X
10	XII	XII	XII	XII	XII	XII	VI	VI	VI	VI	VI	VI	VI
11	II	II	II	II	II	II	II	II	II	II	II	IV	IV
12	III	III	III	III	III	III	III	IV	IV	IV	IV	II	II
13	IV	IV	IV	IV	IV	IV	IV	III	III	III	III	III	III

Source: Table 4

TABLE 13

PER CENT OF TOTAL CLASSIFIED EMPLOYMENT IN THE
)POLITAN AREA OF INDUSTRY CATEGORIES

56	1957	1958	1959	1960	1965	1970	1975	1980
	4	4	4	5	4	5	5	5
	11	11	11	11	11	11	11	11
	12	13	13	13	13	13	13	13
	13	12	12	12	12	12	12	12
)	10	10	10	10	10	10	10	10
	1	1	1	1	1	1	1	1
;	8	8	8	8	8	8	8	8
'	7	7	7	7	7	7	7	7
;	3	3	3	3	3	3	2	2
;	5	5	5	4	5	6	6	6
?	2	2	2	2	2	2	3	3
)	9	9	9	9	9	9	9	9
;	6	6	6	6	6	4	4	4

TABLE 14

THE ORDER OF RANK AS A PER CENT OF TOTAL CLASSIFIED EMPLOYMENT IN UTAH OF INDUSTRY CATEGORIES

Classification	1952	1953	1954	1955	1956	1957	1958	1959	1960	1965	1970	1975	1980
I	2	2	3	2	3	3	3	3	4	5	5	5	6
II	9	9	9	10	10	9	10	10	11	11	11	12	12
III	7	7	7	7	5	5	7	8	7	7	9	9	10
IV	13	13	13	13	13	13	13	13	13	13	13	13	13
V	12	12	12	12	12	12	12	12	12	12	12	11	11
VI	4	5	5	6	7	7	5	5	5	4	4	4	4
VII	10	10	11	11	11	11	11	11	10	10	10	10	9
VIII	8	8	8	8	8	8	8	7	8	8	8	8	7
IX	3	3	2	3	2	2	2	2	2	2	2	2	2
X	6	6	6	5	6	6	6	6	6	6	7	7	8
XI	1	1	1	1	1	1	1	1	1	1	1	1	1
XII	11	11	10	9	9	10	9	9	9	9	6	6	5
XIII	5	4	4	4	4	4	4	4	3	3	3	3	3

Source: Table 4.

TABLE 15

THE ORDER OF RANK AS A PER CENT OF TOTAL CLASSIFIED EMPLOYMENT IN THE UNITED STATES OF INDUSTRY CATEGORIES

Classification	1952	1953	1954	1955	1956	1957	1958	1959	1960	1965	1970	1975	1980
I	2	2	2	2	2	2	2	2	2	3	5	5	5
II	11	11	11	11	11	11	11	11	11	11	11.5	12	12
III	12	12	12	12	12	12	12	13	13	13	13	13	13
IV	13	13	13	13	13	13	13	12	12	12	11.5	11	11
V	6	6	6	6	6	6	6	6	6	6	6	6	7
VI	9	9	9	9	9	9	10	10	10	10	10	10	10
VII	3	3	3	3	3	3	4	4	4	5	4	4	4
VIII	8	8	8	8	8	8	8	8	8	8	9	8	8
IX	5	5	5	5	5	4	3	3	3	2	2	2	2
X	7	7	7	7	7	7	7	7	7	7	8	9	9
XI	1	1	1	1	1	1	1	1	1	1	1	1	1
XII	10	10	10	10	10	10	9	9	9	9	7	7	6
XIII	4	4	4	4	4	5	5	5	5	4	3	3	3

Source: Table 4.

listed from I through XIII. Thus it may be observed, for example, that for Utah Category I, Food and Lumber: Extraction and Processing (principally agriculture), was second in importance and varied between second and fourth most important from 1952 through 1960 but is projected to decline to sixth in importance by 1980.

Observation of the rankings will reveal a high degree of consistency both for the base period and the projections, movements of more than one position being somewhat unusual. An indirect indication of the stability of the base period was obtained by computing Kendall's Coefficient of Concordance, W, and the chi^2 for each of the coefficients. They are as follows:

	W	Chi^2
Ogden Metropolitan Area	.9938	107.3
Utah	.9807	105.9
United States	.9885	106.8

The interpretation of these results is that a continuous cause system was operating during this base period and the probability of the ordering having strong random elements is negligible.

Transition to Labor Force and Population

All of the above analysis applies only to the classified workers. Although these 13 categories include the bulk of the workers, some 10 to 16 per cent of civilian labor force is not included. Groups not included are the self-employed and unpaid family workers, private household workers, unemployed and, in the Ogden Metropolitan Area and Utah, those workers involved in labor disputes. The numbers of workers in these groups are shown on the bottom portions of Tables 1, 2, and 3.

In addition, the number of classified workers really represents the number of jobs and not the number of workers inasmuch as some workers have more than one job and thus are counted twice. Likewise, the estimation of the number of workers in the various industrial categories is likely to produce some discrepancy between the totals derived by a summation of the various groups and the estimated total civilian labor force. The net adjustment figures for these two factors are given in Tables 1, 2 and 3.

The algebraic sum of the nonclassified groups and the net adjustment figures added to the total classified workers yields the estimated number of workers that make up the civilian labor force which is shown on the last row of Tables 1, 2 and 3.

Relating total civilian labor force to civilian population was the final step in the analysis of the three levels of government in the postwar period. These relationships are shown in Table 16 for each year of the period 1950 to 1960 for Utah and the United States and for the two census years only for the Ogden Metropolitan Area. Satisfactory intercensus estimates of population for the latter area were not available.

In Table 16, the labor force-population relationship is stated in two forms. In the fourth column is given the ratio of the civilian labor force to the estimated civilian population, while in the last column the multiplier relationship between the two sets of data is given. There is a reciprocal relationship, of course, between the two measures. As the ratio of labor force to population declines, the population multiplier increases. For the United States, it is noted

that there is steady increase in the multiplier from 2.38 in 1950 to 2.52 in 1960. As might be expected, the multiplier for Utah is somewhat higher than for the nation; also, it increased only very slightly over the decade.

Although a population multiplier for the Ogden Metropolitan Area could be determined only for the beginning and ending of the decade, it was almost identical in size to that of the United States in 1950 and to Utah in 1960. In 1950 it was found to be 2.42 and in 1960, 2.69. Population multipliers for other years of the decade could not be determined because of the fact that population estimates are not made on a county basis by the United States Census Bureau for intercensus years. Estimates were made by a special state-local committee, The Utah Population Work Committee, for a couple of these years, but it was believed that these might not be strictly comparable to the U. S. Census Bureau data.

These labor force-population relationships provide the basis for the population projections in Section IV after the number of classified workers has been determined for 1965, 1970, 1975, and 1980.

TABLE 16

RELATIONSHIP OF CIVILIAN POPULATION TO CIVILIAN LABOR FORCE, OGDEN METROPOLITAN AREA, UTAH AND UNITED STATES
1950 to 1960

Year	Total Civilian Population[a]	Total Civilian Labor Force	Ratio of Labor Force to Population	Population Multiplier
		United States[b]		
	(thousands)	(thousands)		
1950	150,202	63,099	42.0	2.38
1951	151,082	62,884	41.6	2.40
1952	153,366	62,966	41.1	2.43
1953	156,047	63,815	40.9	2.44
1954	159,086	64,468	40.5	2.47
1955	162,305	65,848	40.6	2.46
1956	165,341	67,530	40.8	2.45
1957	168,370	67,946	40.4	2.48
1958	171,426	68,647	40.0	2.50
1959	174,538	69,394	39.8	2.51
1960	177,387	70,306	39.6	2.52
		Utah		
1950	692,000	259,800	37.5	2.67
1951	704,000	272,400	38.7	2.58
1952	726,000	278,900	38.4	2.60
1953	746,000	282,000	37.8	2.65
1954	757,000	278,200	36.8	2.72
1955	793,000	291,200	36.7	2.72
1956	820,000	297,000	36.2	2.76
1957	834,000	303,500	36.4	2.75
1958	852,000	311,200	36.5	2.74
1959	874,000	324,500	37.1	2.70
1960	893,000	334,000	37.4	2.67
		Ogden Metropolitan Area		
1950	101,800	42,100	41.4	2.42
1960	144,600	53,800	37.2	2.69

[a]As of July 1 for Utah and United States, as of April 1 for Ogden Metropolitan Area.

[b]Excludes Alaska and Hawaii.

Source: Population--U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 229, May 22, 1961, and No. 230, May 25, 1961; labor force--Tables 1, 2 and 3 of this report.

SECTION III

INDUSTRY EMPLOYMENT PROJECTIONS

General Comments on the Economic Pattern, 1952-1960

During the base period analyzed for extrapolation purposes, the trend indicators showed increasing employment for all three levels of government. However, there were significant differences among them. The State of Utah strongly influenced by the Salt Lake Metropolitan Area, expanded more rapidly than the United States. The following summary table permits a direct comparison of the three levels of government at the beginning and at the end of the period.

	Classified Employment			Growth Rate	
	1952	1954	1960	1952 1960	1954 1960
Ogden Metropolitan Area	47,851	41,565	48,544	0.2	2.6
Utah	241,571	238,188	286,432	2.2	3.1
United States	55,286 (000's)	55,122 (000's)	58,807 (000's)	0.8	1.1

Although all three levels were subject to the impact of the post-Korean readjustment, as the summary table shows, it is quite evident that the Ogden Metropolitan Area felt the impact more severely than either Utah as a whole or the United States. In the Ogden Area, the decline in classified employment from 1952 to 1954 was about 13 per cent whereas the decline for the State, as a whole, was only 2 per cent and for the nation, a mere 0.3 per cent. This sharp decline in the Ogden Area between 1952 and 1954 affects significantly the average rate of growth over the nine-year period of 1952 to 1960. For the whole period, the average annual growth rate

was only 0.2 per cent, but for the period 1954 to 1960, it was 2.6 per cent. The differences between the average growth rates for these two periods for both Utah and the United States were much less than for the Ogden Area. For Utah, the 1952-1960 growth rate was 2.2 per cent and 1954-1960, 3.1 per cent. For the United States, the two rates, respectively, were 0.8 and 1.1 per cent.

From 1954 to 1960 there was a steady increase in employment in the Ogden Metropolitan Area. Hence, this period is the relevant one as the base for forecasting future employment and not the period from 1952 to 1960.

Another factor affecting the growth trend in the base period was the 1957-1958 recession. All three levels of government show marked variations from trends as a result of the 1957-1958 recession. In this situation, the Ogden Metropolitan Area shows a smaller effect than either Utah as a whole or the United States.

Except for the post-Korean adjustment and the 1957-1958 recession, the series show considerable over-all regularity which led to the conclusion that the trends established during the base period could be considered as representative of "normal" periods of growth, "normal" implying the absence of any exogeneous development, a recession, a substantial modification of defense activities in Utah, or some major innovation leading to a rapidly increasing rate of development.

The over-all trend is, of course, an aggregate of individual series some of which are increasing at a lower and some at faster rates than the average. For the Ogden Metropolitan Area, the categories Food and Lumber, Energy and Fuels, and Transportation and Communication were below the average growth rate by the largest amount. Construction was also somewhat below average. Those categories account-

ing for the increase were Metal Fabrication (though the amount of employment involved in this category is small, the growth rate was very high), Defense, Government, Distribution, Finance, and Services. The increase in the last four categories is consistent with the growth of any metropolitan area which is beginning increasingly to provide services for the surrounding hinterland and in general to play the role of the intrepot.

For Utah the categories below the average growth rate were Food and Lumber, Energy and Fuels, Primary Metals, Mining, and Transportation and Communication. In general, these lower rates of growth (or absolute decreases) reflect the declining importance of the extractive sector of the economy as well as the technological revolution in transportation which has affected the nation as a whole. Significantly faster than the average growth rates were noted in Nonmetallic Minerals and Chemical Products, Metal Fabrication, Government, Distribution, Finance, and Services. The increases in many of these categories reflect the increased importance of the Salt Lake Metropolitan Area in Utah.

For the categories Food and Lumber, Energy and Fuels, and Transportation and Communication, the pattern for the United States is similar to the pattern for Utah: There have been either declines or minimal increases. In addition, in Metal Fabrication--principally steel--the United States has experienced growth well below average rates. It is interesting to note that for the United States those categories which are growing faster than the average have been the same with one exception as in Utah: Nonmetallic Minerals and Chemical Products, Government, Distribution, Finance, and Services.

An analysis of the location quotients is useful in providing a picture of what is happening to the Ogden Metropolitan Area as compared with the State, and of what is happening to the State as compared with the United States. However, location quotients are sensitive to cyclical fluctuation, and the leads or lags in the dispersion of cyclical fluctuations to the various parts of the country make the location quotients appear unstable over short periods of time. Ignoring both smaller variation in the location quotients and those changes which show no appreciable regularity, there was surprising stability in all of the location quotients for the Ogden Metropolitan Area indicating that quite generally the industrial pattern in this area is not changing relatively to the State of Utah. There was a very slight increase in the relative importance of Food and Lumber (agriculture), Construction, Transportation and Communication, Other Manufacturing, and Distribution. It is interesting to note that only two categories, Transportation and Communication, and Defense, were relatively more important in the Ogden Metropolitan Area than in Utah; Government was of the same importance; and all other categories were relatively less important. Defense, of course, was some 3 1/2 to 4 times as important in the Ogden Area as in the State as a whole. On the other hand, an analysis of the location quotients for Utah and the United States indicates an increasing relative importance in Nonmetallic Minerals and Chemical Products, Metal Fabrication and, noticeably since 1957, Defense.

In general, employment categories have held a relatively stable relationship among the three levels of government. This is demonstrated by the general stability of the location quotients.

Within each of the levels of government, an analysis of the shifts in relative ranking of industry groups in terms of their importance has indicated also a high degree of stability along the growth trends. As indicated above, a Kendell's coefficient of concordance of in excess of .98 was obtained for all three levels. There was an unusually large degree of stability in the ranking of industrial categories in the Ogden Metropolitan Area. Nine of the 13 industrial categories held the same rank throughout the base period of 1952 to 1960. Food and Lumber (agriculture) and Transportation and Communication alternated between fourth and fifth place. Primary Metals and Nonmetallic Minerals alternated for the two lowest positions. In absolute number, however, both of these categories are too small to be significant.

For Utah, one of the most startling declines in importance was the shift in Food and Lumber from second to fifth in importance as a source of employment. It is increasingly difficult to find any support for the popular belief (which has not been true for some time) that Utah is in any sense an important agricultural state. Services increased in importance from fifth to third place. The other categories in Utah were either fairly consistent in terms of ranking or did not develop a significant trend towards changed levels of importance. There were some shifts in the smaller categories which, however, were not significant because a small absolute change was sufficient to bring about a change in rank.

For the United States, only two categories showed shifts in relative importance among the 13 categories: Government, which improved from fifth to third and Other Manufacturing which went down from third to fifth place.

This section will conclude with the general observation that the period used as a basis for extrapolation, particularly the years after the post-Korean adjustment

(1954 to 1960), has been one in which some very useful and meaningful patterns were established. The high ratio of defense to total employment in the Ogden Metropolitan Area obviously makes this area highly dependent on national defense policies and technological developments in the missile industry. If the assumptions made with respect to defense activities are reasonably close to actuality, the writers conclude that there is no reason inherent in the data for the nine years of 1952 to 1960 to lead to the conclusion that there will be major changes in the pattern in the foreseeable future. Omitting defense, all of the suggestions coming to the attention of the writers as to major innovations which might affect the prevailing pattern seem to be highly speculative and provide no basis for feeling that there will be major changes in the observed trends. The minor exceptions to these general observations will be noted in the following section, which is concerned with the analysis of the rates used in the extrapolation of the individual employment categories.

Growth Rates for Estimating Classified Employees

In this section the reasons will be discussed which lead to the selection of the growth rates used to project employment by the major industry classifications developed for this study. In general, major reliance was placed on the information developed with respect to the base period of 1952 to 1960--in effect projecting the patterns which characterized this period. Exceptions were made, however, in those cases where general knowledge of an industry category lead the writers to believe that something different would develop than indicated by past experience.

The data being used are, it may be observed, of a rough nature; and the time period involved is not long enough to make use of techniques which would give more precise answers. Therefore, in an attempt to avoid spurious accuracy the growth rates used were rounded to the nearest .5 per cent.

I. Food and Lumber: Extraction and Processing

Ogden Metropolitan Area--Growth Rate: -1.0 per cent through 1970 and 0.0 per cent from 1970 to 1980.

Employment in agriculture declined during the nine-year base period from 4,938 to 4,333, a rate of decrease of 1.6 per cent. For the period 1954 to 1960, the rate of decrease was 1.5 per cent. The average annual change was -1.6 per cent, but when the widest and next widest deviations from the mean were eliminated, the result was -0.8 and 0.0 per cent respectively.

The growth of the Ogden Metropolitan Area will increasingly transfer land at present used for agriculture into residential uses. However, as the result of increased population, the increased demand for agricultural commodities locally produced will tend to offset this. In addition, much of the absolute decrease in employment in this category is attributable to a "one-shot" decrease in Food and Kindred Products. Therefore, instead of the 1.5 per cent decrease which the data might justify, it was decided to select a rate of decrease of 1.0 per cent for the first two five-year periods and no increase for the second two five-year periods.

Utah--Growth Rate: -1.0 per cent through 1970 and 0.0 per cent from 1970 to 1980.

Employment in agriculture in Utah declined from 35,119 in 1952 to 31,690 in 1960, a rate of decrease of 1.3. This is exactly the same rate as that observed from 1954 to 1960. The average annual percentage change was -1.3; and when the

widest and next widest deviations from the mean were eliminated, the rates became, respectively -1.8 and -1.3. However, increased population will mean increased demand for food so the more obvious rate of decrease was shaded somewhat. Thus, it was decided to decrease employment in agriculture by 1.0 per cent per year through 1970 at which point employment would be stabilized by increased demand.

United States--Growth Rate: -1.0 per cent.

Agricultural employment in the United States declined from 9,423,500 in 1952 to 8,112,800 in 1960 for a rate of decrease of 1.9. The rate of decrease from 1954 to 1960 was 1.6. The average annual change was -1.8; and when the first and second widest deviations from the mean were removed, the percentage changes were, respectively, -2.5 and -2.1. The two worst years were 1956-1957 and 1957-1958 when the annual decreases in employment were -5.3 and -5.1. These years were not representative of the period. However, the impact of technological change in agriculture for the United States as a whole has been significant; and there is no reason to believe that it will not continue throughout the period of the forecast. However, because of the increase in population, the decline will not be as severe as in some of the years during the base period. It was therefore decided to use a rate of decrease of 1.0 per cent for the United States throughout the entire period of the forecast.

II. Energy and Fuels

Ogden Metropolitan Area--Growth Rate: 1.0 per cent

Employment in Energy and Fuels in the Ogden Metropolitan Area increased from 308 in 1952 to 318 in 1960, a rate of increase of 0.4 per cent per annum. The rate of decrease from 1954 to 1960 was 0.4 per cent per annum. The average

percentage change was 1.0 and when the widest and the next widest deviations from the mean were eliminated, the result was 3.3 and 4.6 per cent respectively.

The employment base is clearly too small to permit a reliable projection. It should, however, be noted that virtually all employment in this category is found in Utilities and Water Supply Systems and is clearly dependent upon the increase in population. There are economies of scale operating in utilities systems which will undoubtedly lead to increases in employment of a smaller magnitude than increases in population. Therefore, it was decided to project an annual rate of increase of only 1.0 per cent for this category.

Utah--Growth Rate: 0.5 per cent.

Employment in Energy and Fuels increased from 8,790 in 1952 to 8,997 in 1960, an increase of 0.3 per cent per year. The rate of increase from 1954 to 1960 was 1.1 per cent. The average annual percentage change was 0.5. The elimination of the widest and next widest deviation from the mean gives new averages of -1.2 and 0.0 per cent respectively.

In this category the principal employers are bituminous coal mining; petroleum refining and related industries; and gas and electric utilities. Employment in bituminous coal, a declining industry, has decreased sharply in Utah following the national trend. The gains in automation in petroleum refining make it unlikely that this activity will account for any significant increase in employment in Utah. The primary increase will come from the increased demand for gas and electric utilities as the result of an increase in population. This effect will probably continue to offset the decline in the bituminous coal industry. Given these considerations, a rate of 0.5 was used as representative of the base period experience.

United States--Growth Rate: -0.5 per cent.

Employment in Energy and Fuels decreased from 1,500,900 in 1952 to 1,314,500 in 1960, a decrease of 1.6 per cent per year. The rate of decrease from 1954-1960 was 1.1 per cent per annum. The average annual change was -1.6. The elimination of the widest and next widest deviations from the mean gives, respectively, -2.3 and -1.8 per cent.

The principal source of the decline in employment during the base period was in bituminous coal mining where employment dropped from 327,800 in 1952 to 158,900 in 1960. Other sources of employment, except for public utilities, in this group also showed declines especially in recent years. There is no reason to believe that these declines will not be offset to some extent by increased levels of demand which will occur as the result of increases in population. This consideration led to the selection of a somewhat smaller rate of decline than the base period statistics might indicate.

III. Primary Metals: Mining and Closely Related Processing

Ogden Metropolitan Area--Growth Rate: 2.0 per cent.

Employment in Primary Metals in the Ogden Metropolitan Area ranged from a low of 5 to a high of 61 in the nine-year base period. The smallness of the base and the possibility of wide percentage variations within slight absolute magnitude changes makes the projection techniques of this study meaningless. The writers are, therefore, assuming that growth will be approximately the same in this category as it will be for the Ogden Metropolitan Area classified employment as a whole; a rate of 2.0 per cent is therefore being used.

Utah--Growth Rate: 0.0 per cent.

Employment in Primary Metals in the State decreased from 16,619 in 1952 to 16,564 in 1960, a rate of decrease of 0.1 per cent. The rate of decrease from 1954 to 1960 was 0.2. The average annual change was 0.5, but when the widest and next widest deviations from the mean were eliminated, the result was 3.1 and 1.1 per cent respectively.

For Utah, primary mining activity during the base period was centered around the production and processing of copper, blast furnaces, steel works and rolling and finishing mills (largely Geneva), lead and zinc mining and miscellaneous primary metal industries (largely uranium). It has already been indicated that no expansion of the copper industry is to be expected. Lead and zinc have been declining throughout the period, and it is a declining industry for the nation as a whole. Employment in the uranium industry expanded rapidly during the base period, reaching a peak in 1957, but has, in general, been declining since then. The future of the uranium industry is uncertain after the contractual arrangements with the U. S. Government expire in the mid-1960's. The only source of potential expansion, then, appears to be in the steel industry and at the processing level, which may, at best, be able to offset the other tendencies. Therefore, in spite of the base period growth experience, no increase for this category is projected.

United States--Growth Rate: 0.5 per cent.

Employment in the Primary Metals in the United States increased from 987,700 in 1952 to 993,400 in 1960, a rate of increase of 0.1 per cent. The rate of decrease between 1954 and 1960 was 0.2 per cent. The average annual change was 0.5 per cent, but when the widest and next widest deviations from the mean

were eliminated, the result was 2.7 per cent and 1.4 per cent respectively. The reason for the significant deviation of the average annual changes from the growth rate is because of large annual changes in employment varying from 11.1 in 1952-1953 to -11.5 per cent in 1957-1958. The deviations are the result of the Korean War and the recession of 1957-1958.

IV. Nonmetallic Minerals and Chemical Products

Ogden Metropolitan Area--Growth Rate: 2.0 per cent.

Employment in Industrial Minerals in the Ogden Metropolitan Area ranged from a low of 6 to a high of 30 in the nine-year base period. The smallness of the base and the possibility of wide percentage variations within slight absolute magnitude changes make the projection techniques of this study meaningless. The writers are, therefore, assuming that growth will be approximately the same in this category as it will be for the Ogden Metropolitan Area classified employment as a whole. A rate of 2.0 is therefore being used.

Utah--Growth Rate: 6.5 per cent.

Employment in this category in Utah expanded from 1,340 in 1952 to 2,178 in 1960, a rate of increase of 6.3 per cent. The rate of increase for 1954 to 1960 was 5.8. The average annual change was 6.4, but when the widest and next widest deviations from the mean were eliminated, the result was 7.6 and 6.6 respectively.

The potentialities of further developments in chemical products in Utah are great. Utah resources in such chemicals as nitrogen, phosphates, potash, lime, gypsum and gilsonite are extensive, and their development will become economically feasible as the demand for such products expands with development of the chemical industries in the country as a whole.

The category is, of course, a small one; but the writers feel that its growth potential in Utah is high. Therefore, a growth rate of 6.5 was selected which is as high as the base period results will justify.

United States--Growth Rate: 2.5 per cent.

Employment in Nonmetallic Minerals and Chemical Products for the United States was 873,800 in 1952 and 987,600 in 1960, a rate of increase of 1.5 per cent. The rate of increase for 1954 to 1960 was 1.3 per cent. The average annual change was 1.5, but when the widest and next widest deviations from the mean were eliminated, the result was 2.2 per cent and 2.8 per cent respectively.

The average annual change figure has been markedly affected by the post-Korean and 1957-1958 recession adjustments. The writers feel that especially in the area of chemical and allied products the increasing specialization of the United States economy, which characterizes the industrial revolution of our time, will lead to a rate of growth at least on the average as high as that observed when the worst years during the base period are eliminated. Therefore, an increase of 2.5 per cent per year is projected.

V. Metal Fabrication

Ogden Metropolitan Area--Growth Rate: 5.0 per cent.

Employment in metal fabrication increased from 354 in 1952 to 537 in 1960, a rate of increase of 5.8 per cent. The rate of increase from 1954 to 1960 was 8.0 per cent. The average annual change was 6.0, but when the widest and next widest deviation from the mean were eliminated, the result was 4.6 and 5.7 respectively.

The base, again, is too small to provide a reliable guide for future experience. It is apparent, however, that employment in this category should expand somewhat faster than in Utah as a whole for which a rate of 4.5 per cent has been used. It is, therefore, assumed that this category will expand at a rate of 5.0 per annum.

Utah--Growth Rate: 4.5 per cent.

Employment in this category in Utah has increased from 3,724 in 1952 to 5,715 in 1960, a rate of increase of 5.5 per cent. The rate of increase between 1954 and 1960 was 5.8 per cent. The average annual change was 5.6, but when the widest and next widest deviations from the mean were eliminated, the result was 4.3 and 5.5 per cent respectively.

There has been very little increase in this category since 1957. It should also be noted that most of the employment in the State has been in the Salt Lake Metropolitan Area with only about 1,000 employed in the category outside this area. In fact, the percentage employed outside the Salt Lake Metropolitan Area has declined; and it is likely that it will continue to do so. Therefore, employment for Utah is projected at a lower rate than for either the Salt Lake or Ogden area.

United States--Growth Rate: 0.5 per cent.

Employment in the Metal Fabrication category decreased from 4,083,300 in 1952 to 3,987,500 in 1960, a rate of decrease of 0.3. The rate of increase for 1954 to 1960 was 0.5 per cent. The average annual change was 0.0, but when the widest and next widest deviations from the mean were eliminated, the result was 1.9 and 4.2 respectively. The last statistics appear high because of the extremely large declines (in 1953 and 1957) eliminated by the process.

Metal Fabrication and Primary Metals appear to be closely linked. Automation has been extremely important in both of these categories and will probably keep the rate of increase somewhat below the rate of increase for employment as a whole. During the base period, employment for the economy as a whole expanded at a rate of 0.8 per cent; from 1954 to 1960 the rate of growth was 1.1. The average annual change was 0.8 per cent. When the widest and next widest deviations were eliminated from the mean, the results were 1.4 and 2.0 per cent respectively. The most representative growth figure for the economy as a whole during the base period appears to be something in excess of 1.0 per cent.

For Metal Fabrication, therefore, a projection rate was used somewhat lower than the overall rate expected for the United States, but one which will result in an increase in the absolute number of employees.

VI. Defense

Ogden Metropolitan Area--Growth Rate: 20 per cent absolute increase by 1965, another 20 per cent absolute increase by 1970, nothing thereafter.

Utah--Growth Rate: 25 per cent absolute increase by 1965, another 25 per cent absolute increase by 1970, nothing thereafter.

The assignment of increases on a State and local basis is admittedly arbitrary. The data relating to experience during the base period have no meaning because the determinants of defense expenditures and defense employment are, in terms of the present analysis, subject to a non-economic cause system. Even more important than the amount of defense spending on a national basis are the policy decisions to assign certain defense activities to Utah or to the Ogden Metropolitan Area. There

is no way in which these decisions may safely be predicted even for short periods of time. The problem is made even more difficult by the fact that the Metropolitan Area has a small base of defense employment relative to the size of defense contracts which are customarily let. This difficulty is only slightly less at the State level.

For the State, employment in the missile industry was in the neighborhood of 9,000 in 1960. Tentative plans would seem to indicate an increase to about 20,000 or more within the next three or four years. If there are moderate increases in the other components of defense production, this would provide the approximate 50 per cent forecast for the whole defense category for Utah before 1970. Insofar as the present missile program, with its emphasis on solid fuel propellants is scheduled to phase out by the end of the 1960's, there is no basis for anticipating increases beyond that date. Of course, new aerospace or other military activities resulting from research and development may be assigned to Utah in the future but there is no way of forecasting such events. However, the political responsiveness of Washington to the pleas of the states whose prosperity is endangered by a shift in defense expenditures makes it unlikely, in the absence of a major change in cold war policy, that defense employment in Utah will decrease. The writers, therefore, are assuming that the level reached by 1956-1970 will be maintained throughout the period.

Much of the new defense spending is located in Box Elder County--an amount greater than the State average. It is, therefore, believed that the growth of defense employment in the Ogden Metropolitan Area will be somewhat less than the State

average. Hence, it is assumed that there will be a 20 per cent absolute increase by 1965 and another 20 per cent absolute increase by 1970, nothing thereafter.

United States--Growth Rate: 0.0 per cent.

Employment in defense decreased from 2,413,600 in 1952 to 2,188,200 in 1960, a decrease of 1.3 per cent per annum. The decrease from 1954 to 1960 was at the same rate. The average annual percentage change was -1.0 per cent, and when the widest and next widest deviations from the mean were eliminated, the results were -2.6 and -1.3 per cent respectively. It should be noted that since the end of the Korean War, defense employment has been relatively stable though there has been some downward tendency since 1957. This stability is in some measure attributable to a greater emphasis on missiles and heavy bombers--an emphasis which will be increased with the gradual phasing out of many of the SAC operations. To some extent, of course, this is offset by the intensification of preparation for "brush-fire" warfare requiring equipment which is more labor intensive.

It should also be noted that there has been a long run tendency toward decline of "civilian employees of the Defense Department," probably as a matter of United States policy. In fact, in no single year since 1952 has this component of Defense increased. In many instances these positions are now being taken care of by the military.

Given these factors, it would clearly take a quite sizeable increase in the defense budget to result in a reversal of the trend during the base period. Even the present contemplated increases, which at any event may be of a temporary nature, are unlikely significant to offset the trend. It is believed to be a liberal estimate to project no increase in defense employment for the period of the forecast.

VII. Other Manufacturing

Ogden Metropolitan Area--Growth Rate: 4.0 per cent.

Employment in the Metropolitan Area in Other Manufacturing increased from 871 in 1952 to 1,340 in 1960, a rate of increase of 5.5 per cent per annum. From 1954 to 1960, employment increased at a rate of 4.5 per cent per annum. The average percentage increase was 6.0 per cent, but when the widest and next widest deviations from the mean were eliminated, the results were 2.3 and 3.7 per cent respectively.

There was very little change in employment in this category from 1952 to 1957, the range being from 834 to 890 employees. The spurt in 1958 was due largely to the increase in Stone, Clay and Glass Manufacturing.

However, the writers feel that this category will continue to grow somewhat faster in the Ogden Area than for Utah as a whole. Consequently, the rate selected was 4.0 per cent as contrasted with the Utah rate of 3.5 per cent for extrapolation.

Utah--Growth Rate: 3.5 per cent.

Employment in Utah increased from 7,623 in 1952 to 9,217 in 1960, a rate of increase of 2.4 per cent per annum. The rate of increase from 1954 to 1960 was 4.0 per cent per annum. The average annual change was 2.5 per cent, but when the widest and next widest deviations from the mean were eliminated, the result was 4.1 and 3.6 per cent respectively.

Other Manufacturing in both Salt Lake and Ogden Metropolitan Areas is becoming an increasing percentage of that category for the State, which indicates that the increase in these metropolitan areas will, to a considerable extent, carry the State as a whole. But given the continued shift in population to the Wasatch Front, which of course will

provide the skilled labor necessary for manufacturing activities, it is expected that manufacturing in the State will grow less rapidly than manufacturing along the Wasatch Front. The writers, therefore, selected a growth rate of 3.5 per cent. This percentage is approximately in the middle of the growth statistics for the category at the State level.

United States--Growth Rate: 1.0 per cent.

Employment in the United States in Other Manufacturing increased from 6,819,800 in 1952 to 6,998,900 in 1960, a rate of increase of 0.3 per cent per annum. From 1954 to 1960 the rate of increase was 0.8 per cent per annum. The average percentage increase was 0.4, but when the widest and next widest deviations from the mean were eliminted, the result was 1.3 and 2.4 per cent respectively. The low statistic for the 1952-1960 growth rate is attributable to the high initial level caused by the Korean War expansion, while the low statistic for the average annual change is attributable to the post-Korean War adjustment and the 1957 recession. The widest deviation eliminated first from the average was the Korean adjustment which resulted in an average growth rate of 1.3; this is probably quite representative of the base period. However, for the periods of similar length, if past experience holds true, there would typically be at least two recessions, which would have kept the average in the neighborhood of 1.0 per cent or perhaps a little lower.

As already indicated, this category is strongly oriented towards the consumer level. In keeping with the hypothesis of tying the size of the population to the amount of employment, it may be argued that any category tied closely to the

consumer level, in the absence of other considerations, will probably grow at about the same rate as employment as a a whole. A conservative figure for the growth of the labor force is a rate of 1.0 per cent. (See the discussion of this point under Metal Fabrication--United States.) It was decided, therefore, to use a growth rate of 1.0 per cent for this category.

VIII. Construction

Ogden Metropolitan Area--Growth Rate: 2.0 per cent.

Employment in the Metropolitan Area increased from 1,576 in 1952 to 2,122 in 1960, a rate of increase of 3.8 per cent per annum. From 1954 to 1960 employment increased at a rate of 8.1 per cent per annum. The average percentage increase was 5.4 per cent per annum, but when the widest and next widest deviations from the mean were eliminated, the result was 1.4 and 3.9 per cent, respectively.

Employment in construction has been extremely erratic in the Ogden Metropolitan Area, annual percentage changes ranging from -20.7 per cent to 40.2 per cent. In the years 1958 through 1960, it was relatively stable.

Growth in this category should be somewhat greater than for Utah as a whole. Therefore, the 1.5 per cent rate of increase for the State is being used as a guidepost for the Metropolitan Area and a rate of increase of 2.0 per cent is being forecast for the Metropolitan Area.

Utah--Growth Rate: 1.5 per cent.

Employment in Utah in Construction has increased from 11,937 in 1952 to 15,294 in 1960, a rate of increase of 3.1 per cent per annum. From 1954 to 1960 employment increased at a rate of 4.8 per cent per annum. The average

percentage increase was 3.6 per cent, but when the widest and next widest diviations from the mean were eliminated, the result was 0.3 and 1.2 per cent respectively. The writers feel that the growth in the construction industry will be somewhat lower than growth in employment as a whole because much of the backlog of residential construction has been taken care of. There is some evidence at this time of the existence of a surplus in residential construction. But the growth of population should be able to sustain a fairly steady increase in the long run.

United States--Growth Rate: 1.5 per cent.

Employment in the United States in Construction increased from 2,633,100 in 1952 to 2,722,400 in 1960, a rate of increase of 0.6 per cent. From 1954 to 1960 employment increased at a rate of 1.1 per cent per annum. The average annual change was 0.7, but when the widest and the next widest deviations from the mean were eliminated, the result was 1.6 and 0.9 per cent respectively.

The principal components of construction demand are to be found in the rate of net household formation, the type of government activity (participation in the highway program, etc.) and the level of business activity. However, as indicated above, the level of construction is subject to cyclical fluctuations, the nature of which is extremely complex, making short-run forecasting difficult.

Several observations may be made with respect to the experience of the base period. A strong downward bias is given to the average percentages by the period 1956--1958--a period of severe construction depression. The elimination of these two years would have raised the average increase to 2.8 per cent. (The

method adopted for this study resulted in eliminating one upward deviation and one downward deviation, which left the average at 0.9 per cent.) It is, of course, improper to eliminate from consideration merely the bad years in trying to interpret the implications of a time series; for the bad years are an integral part of the overall pattern. Furthermore, it should be noted that the terminal date, 1960, showed virtually no increase over the preceding year, a fact which depressed the growth rate calculations.

With these considerations in mind, the writers feel that an average experience in the neighborhood of 1.5 has been fairly representative of the base period and also that the important components of construction demand will be maintained in the future.

IX. Government

Ogden Metropolitan Area--Growth Rate: 4.0 per cent.

Government employment (excluding defense activities) in the Metropolitan Area increased from 5,355 in 1952 to 7,202 in 1960, a rate of increase of 3.8 per cent. The rate of increase from 1954 to 1960 was 3.6 per cent. The average percentage increase was 4.4 per cent and when the widest and next widest deviations from the mean were eliminated, the result was 1.0 and 3.7 per cent respectively.

There is no reason to expect that the trend in government employment will be any different than for the State as a whole--that is, steadily upward. But, because the somewhat higher rate of growth for the Salt Lake Metropolitan Area is included in the determination of the growth rate for the State, which makes the latter somewhat more heavily weighted towards the high side, a rate of increase of 4.0 per cent is projected for the Ogden Metropolitan Area as compared with 4.5 per cent for the State.

Utah--Growth Rate: 4.5 per cent.

Employment in Utah increased from 29,493 in 1952 to 44,722 in 1960, a rate of increase of 5.5 per cent per annum. From 1954 to 1960, employment increased at a rate of 5.0 per cent per annum. The average percentage increase was 5.4 per cent per annum, but when the widest and next widest deviations from the mean were eliminated, then the result was 4.1 and 5.0 per cent respectively.

If 1953 is taken as the starting point of the base period to avoid the increase in the federal component of some 3,790 workers (approximately 77 per cent) from 1952 to 1953, then the most important components of growth have been state and local, with the local the most significant. There is no reason, as suggested above to think that this category will not continue to become more important. But the lower level of recent expansion of the federal component leads the writers to believe that the overall growth will not be quite as high as indicated by the percentage statistics. Therefore, a growth rate of 4.5 per cent per annum for the State is projected.

United States--Growth Rate: 4.5 per cent to 1965; 4.0 per cent to 1970; 3.0 per cent to 1975; 2.0 per cent to 1980.

Employment for the United States increased from 5,270,900 in 1952 to 7,409,900 in 1960, a rate of increase of 4.3 per cent per annum. The rate of increase from 1954 to 1960 was 5.0 per cent per annum. The average percentage increase was 4.4 per cent, and when the widest and next widest deviations from the mean were eliminated, the result was 4.9 and 4.6 per cent respectively.

From 1953 to 1960 federal employment increased only 215,900 while state and local employment increased 1,881,100. For the country as a whole it is

believed that there will be a tapering off in the rapid rate of increase of the state and local components as the rate at which new services are provided falls off, schools are expanded to the point where they can take care of the tremendous anticipated enrollment, and perhaps in many cases, as a limit is reached in the debt potential of state and local governments. These observations, coupled with the low rate of increase of federal employment resulted in the selection of a declining rate of increase for U. S. employment in this category.

X. Transportation and Communication

Ogden Metropolitan Area--Growth Rate: -1.0 per cent through 1970 and 0.0 per cent from 1970 to 1980.

Employment in the Metropolitan Area decreased from 5,173 in 1952 to 4,348 in 1960, a rate of decrease of 2.1 per cent. The rate of decrease from 1954 to 1960 was 0.7 per cent. The average annual percentage change was -2.1, but when the widest and next widest deviations were eliminated from the mean, the result was -3.3 and -2.5 per cent respectively.

The largest part of the decline was during the first years of the base period, and with the exception of a sharp decrease attributable to the 1957 depression, it has drifted down slightly reflecting not only technological changes in railway traffic management, but the increasing use of substitutes.

It should, however, be remembered that a portion of employment in this category is related to trucking, warehousing, and local and suburban services. These will increase as population increases. On grounds, then, that the decline

in railraods will not be as sharp in the future as it has been in the past and that population increases will induce increased employment in this category, a lower rate of decrease in being projected than one which might be justified by the overall statistics from this category.

Utah--Growth Rate: 0.0 per cent.

Employment in Transportation and Communication at the State level decreased from 20,327 in 1952 to 18,681 in 1960, a rate of decrease of 1.0 per cent per annum. The rate of decrease from 1954 to 1960 was 0.5 per cent per annum. The average percentage change was -1.0 per cent, and when the widest and next widest deviations from the mean were eliminated, then the result was -0.2 and -0.5 per cent respectively.

The decline in interstate railroads for the State has been less sharp in percentage terms than for the Metropolitan Area, nor has the percentage decline in motor freight transportation and warehousing been as great. It will also be noted that virtually all of the employment in air transportation is to be found in the Salt Lake Metropolitan Area where it, of course, constitutes a much larger percentage of the total employment than for the State. Hence, in general, the potential offsets are more important at the State level than for the Ogden Metropolitan level. Therefore, the writers do not feel that employment will show the same rate of decline as for the Ogden Metropolitan Area.

United States--Growth Rate: 0.0 per cent.

In the United States, employment in Transportation has decreased from 3,618,900 in 1952 to 3,276,200 in 1960, a rate of decrease of 1.2 per cent. The rate of decrease from 1954 to 1960 was 0.7 per cent per annum. The average

percentage change was -1.2 per cent, and when the widest and next widest deviations from the mean are eliminated, then the result is -0.4 and 0.6 per cent respectively.

Again it should be noted that the major cause of the decline is found in interstate railroads, employment in this component declining by slightly over one-half million workers or approximately 37 per cent. However, employment in this category has been virtually unchanged since 1958, the declines in interstate railroads having been offset by increases in other components. Thus, it is felt that employment in the category will be reasonably unchanged during the period of the projection.

XI. Distribution

Ogden Metropolitan Area--Growth Rate: 3.5 per cent.

Employment in the Distribution category in the Ogden Metropolitan Area increased from 6,380 in 1952 to 7,937 in 1960, a rate of increase of 2.8 per cent per annum. The rate of increase from 1954 to 1960 was 4.0 per cent per annum. The average percentage increase was 2.6 per cent, but when the widest and next widest deviations from the mean are eliminated, the result is 4.0 and 3.6 per cent respectively.

Distribution in the Ogden Metropolitan Area will probably continue to grow at a rate somewhat faster than the 3.0 rate of increase being projected for the State of Utah. This appears to be justified by an examination of the base period experience. Therefore, a rate of increase of 3.5 per cent is used for projecting this category.

Utah--Growth Rate: 3.0 per cent.

In Utah employment in Distribution increased from 48,234 in 1952 to 62,895 in 1960, a rate of increase of 3.4 per cent per annum. The rate of increase from 1954 to 1960 was 4.0 per cent. The average percentage increase was 3.4 per cent, and when the widest and next widest deviations from the mean were eliminated, then the result was 3.9 and 3.5 per cent respectively.

The Ogden Metropolitan Area will continue to grow at a faster rate than the State. It will also, as has been pointed out, increasingly play the central city role in providing services and acting as a distribution center for the rest of the area. Therefore, the growth rate for Distribution for the State is being projected at a slightly lower rate than for the Metropolitan Area.

United States--Growth Rate: 2.0 per cent.

Employment in the Distribution category in the United States increased from 10,280,300 in 1952 to 11,641,900 in 1960, a rate of increase of 1.6 per cent. The rate of increase from 1954 to 1960 was 1.3 per cent. The average percentage increase was 1.6 per cent, but when the widest and next widest deviations from the mean were eliminated, the result was 2.0 and 1.8 per cent respectively.

The average percentages were pulled down by the post-Korean adjustment and the 1957 recession. The writers also feel that as the economy becomes more mature there will be a shift towards the tertiary type activities. Therefore, the highest rate which could be justified by the base period statistics is used for projecting employment in Distribution for the nation.

XII. Finance

Ogden Metropolitan Area--Growth Rate: 5.5 per cent through 1965; 5.0 per cent through 1970; 4.5 per cent through 1975; and 4.0 per cent through 1980.

Employment in Finance in the Ogden Metropolitan Area increased from 687 in 1952 to 1,040 in 1960, a rate of increase of 5.3 per cent. The rate of increase from 1954 to 1960 was 5.5 per cent per annum. The average percentage increase was 5.4 per cent, but when the widest and next widest deviations from the mean are eliminated, then the result is 6.5 and 5.7 per cent respectively.

The rapid rate of growth indicated by the underlying data reflect the increasing metropolitan role played by the Ogden Metropolitan Area. There are, however, economies of scale in finance, and it is believed that much of the basic institutional framework has been established to deal with future growth and expansion in this category. Therefore, a declining rate of increase is selected to extrapolate employment during the period of the projection. It should, however, be noted that growth is anticipated at a much more rapid rate in this category than for employment as a whole.

Utah--Growth Rate: 5.5 per cent through 1965; 4.5 per cent through 1970; 4.0 per cent from 1970 to 1980.

Employment in Finance increased in Utah from 7,143 in 1952 to 11,281 in 1960, a rate of increase of 5.9 per cent. The rate of increase from 1954 to 1960 was 5.4 per cent per annum. The average percentage increase was 5.9, and when the widest and next widest deviations from the mean were eliminated, then the result was 5.1 and 5.6 per cent respectively.

The base period experience for employment in Finance shows a very slightly lower rate of increase for the State than for the Metropolitan Area. It is very likely that the Metropolitan Area will become a little more important in this category. Hence, employment in this category is extrapolated at a lower rate for the State than for the Metropolitan Area.

United States--Growth Rate: 3.5 per cent.

Employment in Finance in the United States increased from 1,957,000 in 1952 to 2,485,400 in 1960, a rate of increase of 3.0 per cent per annum. The rate of increase from 1954 to 1960 was 2.7 per cent per annum. The average percentage increase was 3.0 per cent, and when the widest and next widest deviations from the mean were eliminated, then the result was 3.3 and 3.1 per cent respectively.

With an increasingly mature, consumption-oriented economy, with a larger share of the population owning or acquiring property, insurance, and investing in stocks and bonds; and with the increasing importance of consumer finance, installment credit, etc., it appears likely that the Finance sector of the economy will expand at a somewhat faster rate than during the base period. The base period experience appears to be about 3.0 per cent per annum. Therefore, a projection rate of 3.5 per cent is being used.

XIII. Services

Ogden Metropolitan Area--Growth Rate: 3.5 per cent.

Employment in Services increased from 2,676 in 1952 to 3,526 in 1960, a rate of increase of 3.5 per cent per annum. The rate of increase from 1954 to 1960 was 4.5 per cent per annum. The average percentage increase was 5.0 per cent,

and when the widest and next widest deviations from the mean were eliminated, the result was 2.8 and 3.4 per cent respectively.

It is interesting to note, that despite the other metropolitan characteristics of Ogden, employment in the Services category has not expanded as rapidly as for the State as a whole. The reason for this situation, apparently, is to be found in the closeness of Ogden to Salt Lake City. It is thought that Salt Lake City is a heavy exporter of services to the Ogden area which has prevented a more rapid rate of growth in Ogden. The data of the base period justify only a 3.5 rate of growth for projection purposes.

Utah--Growth Rate: 4.5 per cent.

Employment in Utah in Services increased from 22,083 per cent in 1952 to 32,176 in 1960, a rate of increase of 4.8 per cent per annum. The rate of increase from 1954 to 1960 was 5.4 per cent per annum. The average percentage change was 4.9 per cent, but when the widest and next widest deviations from the mean were eliminated, the result was 4.3 and 4.6 per cent respectively.

The changes in employment in Utah have been greater than the changes in employment in the Ogden Metropolitan Area. Hence, a higher extrapolation rate is used in this category for the State.

United States--Growth Rate: 3.0 per cent.

Employment in Services in the United States increased from 5,423,000 in 1952 to 6,638,000 in 1960, a rate of increase of 2.6 per cent per annum. The rate of increase from 1954 to 1960 was 2.7 per cent. The average percentage increase

was 2.6 per cent, but when the widest and next widest deviations from the mean were eliminated, the result was 2.3 and 2.5 per cent respectively.

The base period result would seem to justify a rate of increase for extrapolation purposes of 2.5 per cent per annum. However, the writers feel, as mentioned above, that one of the important characteristics of a maturing economy will be a longrun tendency towards an increasing emphasis on Services. Therefore, Services are projected at a slightly higher rate than that experienced during the past decade.

Summary of Growth Rates

The growth rates which have been discussed are summarized in Table 17. It should be noted that in the case of category VI, Defense, the percentage refers to the absolute magnitude of the increase. The remainder of the rates are annual percentage increases.

The next step in the procedure was to apply the rates by category by government level to employment during either 1960 or the average of 1960 and 1959 if the 1960 employment was different from the 1959 employment by an amount greater than the extrapolation rate being used. Defense, of course, is an exception to this rule because of the different extrapolation technique. Employment was rounded to the nearest hundred in the case of the Ogden Metropolitan Area and Utah and to the nearest thousand in the case of the United States. Using these rates, employment was projected by five-year periods through 1980.

TABLE 17

GROWTH RATES FOR ESTIMATING CLASSIFIED EMPLOYEES

Classification		Growth Rate - - - - Percentages 1965	1970	1975	1980
	Ogden Metropolitan Area				
I.	Food and Lumber: Extraction and Processing	-1.0	-1.0	0.0	0.0
II.	Energy and Fuels	1.0	1.0	1.0	1.0
III.	Primary Metals: Mining and Closely Related Processing	2.0	2.0	2.0	2.0
IV.	Nonmetallic Minerals and Chemical Products	2.0	2.0	2.0	2.0
V.	Metal Fabrication	5.0	5.0	5.0	5.0
VI.	Defense	20.0*	20.0*	0.0	0.0
VII.	Other Manufacturing	4.0	4.0	4.0	4.0
VIII.	Construction	2.0	2.0	2.0	2.0
IX.	Government	4.0	4.0	4.0	4.0
X.	Transportation and Communication	-1.0	-1.0	0.0	0.0
XI.	Distribution	3.5	3.5	3.5	3.5
XII.	Finance	5.5	5.0	4.5	4.0
XIII.	Services	3.5	3.5	3.5	3.5
	Utah				
I.	Food and Lumber: Extraction and Processing	-1.0	-1.0	0.0	0.0
II.	Energy and Fuels	0.5	0.5	0.5	0.5
III.	Primary Metals: Mining and Closely Related Processing	0.0	0.0	0.0	0.0
IV.	Nonmetallic Minerals and Chemical Products	6.5	6.5	6.5	6.5
V.	Metal Fabrication	4.5	4.5	4.5	4.5
VI.	Defense	25.0*	25.0*	0.0	0.0
VII.	Other Manufacturing	3.5	3.5	3.5	3.5
VIII.	Construction	1.5	1.5	1.5	1.5
IX.	Government	4.5	4.5	4.5	4.5
X.	Transportation and Communication	0.0	0.0	0.0	0.0
XI.	Distribution	3.0	3.0	3.0	3.0
XII.	Finance	5.5	4.5	4.0	4.0
XIII.	Services	4.5	4.5	4.5	4.5
	United States				
I.	Food and Lumber: Extraction and Processing	-1.0	-1.0	-1.0	-1.0
II.	Energy and Fuels	-0.5	-0.5	-0.5	-0.5
III.	Primary Metals: Mining and Closely Related Processing	0.5	0.5	0.5	0.5
IV.	Nonmetallic Minerals and Chemical Products	2.5	2.5	2.5	2.5
V.	Metal Fabrication	0.5	0.5	0.5	0.5
VI.	Defense	0.0	0.0	0.0	0.0
VII.	Other Manufacturing	1.0	1.0	1.0	1.0
VIII.	Construction	1.5	1.5	1.5	1.5
IX.	Government	4.5	4.0	3.0	2.0
X.	Transportation and Communication	0.0	0.0	0.0	0.0
XI.	Distribution	2.0	2.0	2.0	2.0
XII.	Finance	3.5	3.5	3.5	3.5
XIII.	Services	3.0	3.0	3.0	3.0

*Absolute magnitude of increase.

Source. Derived from data in Tables 1, 2, 3, 4 and 7 and the judgment of the writers.

The results of these projections are given in Tables 18, 19 and 20. For purposes of convenience, the tables also include the projections of the individual categories as a per cent of total employment, the rank and the location quotient. The last row of each table gives the total classified employees for that level of government.

Chart 8 shows the change in relative importance of projected employment in the major categories comprising about 75 per cent of the total classified workers.

General Comments on the Economic Pattern, 1960-1980

If one examines the aggregate growth rates for classified employment for the entire period of the projection, it will be noted that employment in the Ogden Metropolitan Area is being projected at about the same rate as during the period 1954-1960 (2.5 as compared with 2.6 per cent). Utah employment is being projected at a higher rate (2.8 as compared with 2.2 per cent per annum) if we use the entire base from 1952 to 1960. However, if the period 1954 to 1960 is considered, then a lower rate is being used (2.8 as compared with 3.1). For the United States, a growth rate of 1.6 is being used; this rate should be contrasted with the base growth rates of 0.8 for the 1952-1960 period and 1.1 for the 1954-1960 period. The reasons for emphasizing the comparison with the 1954-1960 period have been indicated above (see pp. 54-55).

TABLE 18

ESTIMATED NUMBER OF CLASSIFIED EMPLOYEES BY MAJOR CATEGORIES AND RELATIVE IMPORTANCE OF EACH CATEGORY IN THE OGDEN METROPOLITAN AREA
1965, 1970, 1975 and 1980

		Base[a]				1965				1970				1975				1980			
	Classification	Number	Per Cent of Total	Rank	Location Quotient	Number	Per Cent of Total	Rank	Location Quotient	Number	Per Cent of Total	Rank	Location Quotient	Number	Per Cent of Total	Rank	Location Quotient	Number	Per Cent of Total	Rank	Location Quotient
I.	Food and Lumber: Extraction and Processing	4,400	9.17	4	.81	4,200	7.6	4	.82	4,000	6.2	5	.82	4,000	5.6	5	.84	4,000	5.1	5	88
II.	Energy and Fuels	300	.63	11	.20	300	.5	11	.18	400	.6	11	.24	400	.6	11	.26	400	.5	11	.25
III.	Primary Metals: Mining and Closely Related Processing	12	.02	13	.003	b	b	13	b	b	b	13	b	b	b	13	b	b	b	13	b
IV.	Nonmetallic Minerals and Chemical Products	20	.04	12	.05	b	b	12	b	b	b	12	b	b	b	12	b	b	b	12	b
V.	Metal Fabrication	500	1.04	10	.50	700	1.2	10	.55	900	1.4	10	.61	1,100	1.5	10	.60	1,400	1.8	10	67
VI.	Defense	15,800	32.91	1	3.54	18,900	34.1	1	3.31	22,700	35.1	1	3.17	22,700	31.8	1	3.28	22,700	28.8	1	3.43
VII.	Other Manufacturing	1,300	2.71	8	.85	1,600	2.9	8	.88	2,000	3.1	8	.94	2,400	3.4	8	.97	2,900	3.7	8	1.03
VIII.	Construction	2,100	4.38	7	.83	2,300	4.1	7	.80	2,600	4.0	7	.87	2,900	4.1	7	.98	3,200	4.0	7	1.03
IX.	Government	7,200	15.00	3	.96	8,800	15.9	3	.96	10,700	16.5	3	.92	13,000	18.2	2	.93	15,800	20.0	2	.94
X.	Transportation and Communication	4,300	8.96	5	1.38	4,100	7.4	5	1.28	3,900	6.0	6	1.20	3,900	5.5	6	1.28	3,900	4.9	6	1.28
XI.	Distribution	7,700	16.04	2	.73	9,100	16.4	2	.75	10,900	16.8	2	.76	12,900	18.1	3	.81	15,300	19.4	3	.8.
XII.	Finance	1,000	2.08	9	.53	1,400	2.5	9	.54	1,700	2.6	9	.53	2,200	3.1	9	.60	2,600	3.3	9	.60
XIII.	Services	3,400	7.08	6	.64	4,100	7.4	6	.62	4,900	7.6	4	.58	5,800	8.1	4	.57	6,800	8.6	4	.56
	Total Classified Employees	48,000	100.00			55,500	100.0			64,700	99.9			71,300	100.0			79,000	100.1		

[a] 1960 or average of 1959 and 1960.

[b] Because the base numbers are so extremely small in these two categories, long-term projections on a percentage basis have little meaning. The ranks are likely to remain the same.

Source: Derived from Tables 1, 4, and 17.

TABLE 19

ESTIMATED NUMBER OF CLASSIFIED EMPLOYEES BY MAJOR CATEGORIES AND RELATIVE IMPORTANCE OF EACH CATEGORY IN UTAH
1965, 1970, 1975 and 1980

	Classification	Base[1]				1965				1970				1975				1980			
		Number	Per Cent of Total	Rank	Location Quotient	Number	Per Cent of Total	Rank	Location Quotient	Number	Per Cent of Total	Rank	Location Quotient	Number	Per Cent of Total	Rank	Location Quotient	Number	Per Cent of Total	Rank	Location Quotient
I.	Food and Lumber: Extraction and Processing	31,700	11.20	3	.81	30,100	9.3	5	.76	28,700	7.6	5	.72	28,700	6.7	5	.72	28,700	5.8	6	.71
II.	Energy and Fuels	9,000	3.18	10	1.39	9,200	2.8	11	1.40	9,500	2.5	11	1.39	9,700	2.3	12	1.35	9,900	2.0	12	1.33
III.	Primary Metals: Mining and Closely Related Processing	16,600	5.86	7	3.47	16,600	5.1	7	3.19	16,600	4.4	9	2.93	16,600	3.9	9	2.79	16,600	3.4	10	2.43
IV.	Nonmetallic Minerals and Chemical Products	2,200	.78	13	.47	3,200	1.0	13	.56	4,100	1.1	13	.61	5,700	1.3	13	.68	7,800	1.6	13	.80
V.	Metal Fabrication	5,600	1.98	12	3.0	7,000	2.2	12	.34	8,700	2.3	12	.38	10,800	2.5	11	.44	13,500	2.7	11	.50
VI.	Defense	26,700	9.43	5	2.54	33,400	10.3	4	2.94	21,800	11.1	4	3.47	41,800	9.7	4	3.34	41,800	8.4	4	3.11
VII.	Other Manufacturing	8,900	3.14	11	.26	10,600	3.3	10	.29	12,600	3.3	10	.29	14,900	3.5	10	.32	17,700	3.6	9	.34
VIII.	Construction	15,700	5.55	8	1.19	16,900	5.2	8	1.09	18,200	4.8	8	.98	19,600	4.6	8	.91	21,100	4.3	7	.85
IX.	Government	43,500	15.37	2	1.22	54,100	16.6	2	1.18	67,600	17.9	2	1.13	84,100	19.6	2	1.15	104,900	21.2	2	1.21
X.	Transportation and Communication	18,700	6.61	6	1.18	18,700	5.8	6	1.12	18,700	5.0	7	1.04	18,700	4.4	7	1.00	18,700	3.8	8	.93
XI.	Distribution	61,800	21.83	1	1.10	71,600	22.0	1	1.08	83,100	22.1	1	1.07	96,300	22.4	1	1.06	111,600	22.5	1	1.05
XII.	Finance	11,300	3.99	9	.95	14,800	4.6	9	.98	18,400	4.9	6	1.00	22,400	5.2	6	1.04	27,300	5.5	5	1.08
XIII.	Services	31,400	11.09	4	.98	39,100	12.0	3	.99	48,800	13.0	3	1.01	60,700	14.1	3	1.02	75,700	15.3	3	1.03
	Total Classified Employees	283,100	100.01			325,300	100.2			376,800	100.0			430,000	100.2			495,300	100.1		

[1] 1960 or average of 1959 and 1960.

Source: Tables 2 and 17.

TABLE 20

ESTIMATED NUMBER OF CLASSIFIED EMPLOYEES BY MAJOR CATEGORIES AND RELATIVE IMPORTANCE OF EACH CATEGORY IN THE UNITED STATES
1965, 1970, 1975 and 1980

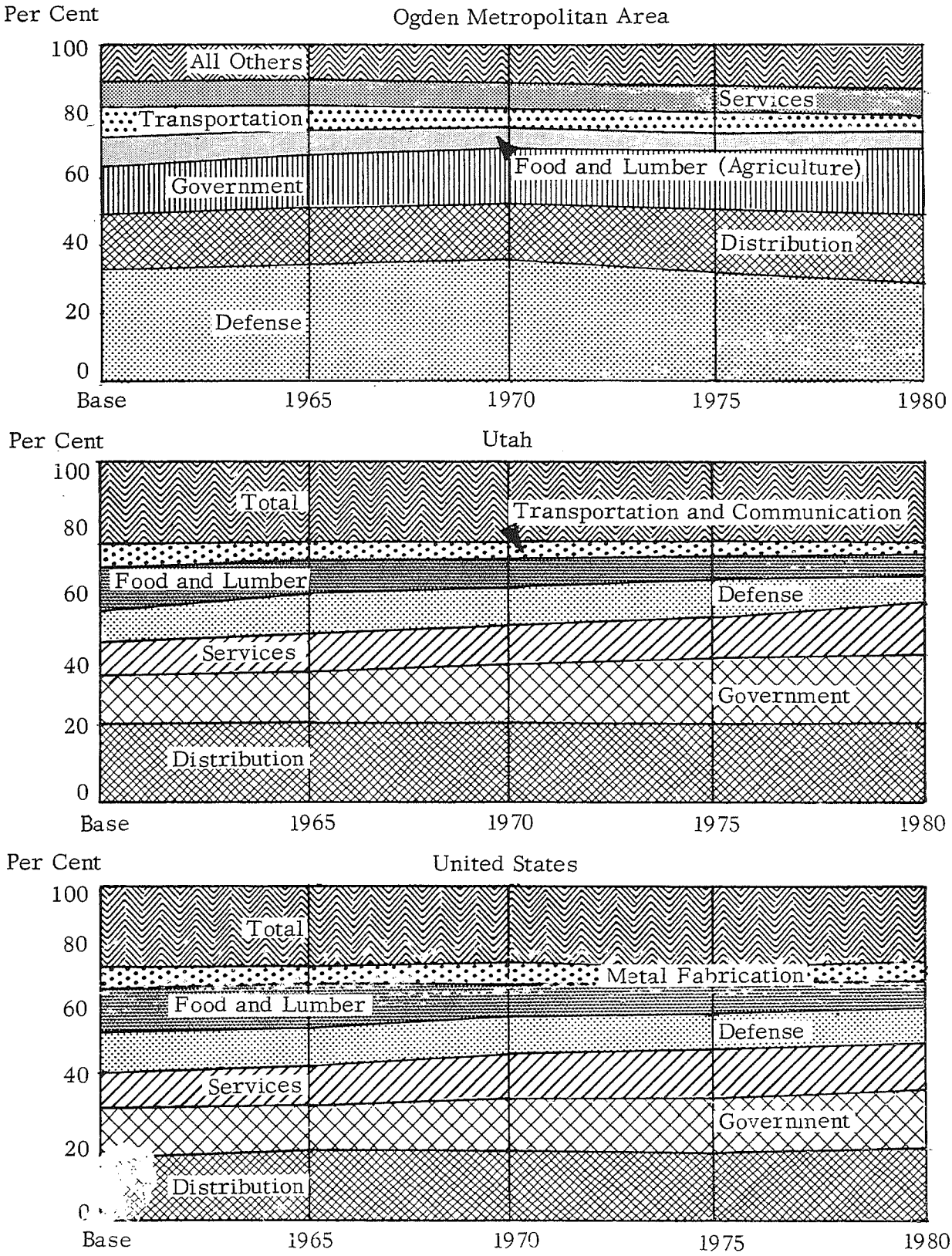
	Classification	Base[1]			1965			1970			1975			1980		
		Number	Per Cent of Total	Rank	Number	Per Cent of Total	Rank	Number	Per Cent of Total	Rank	Number	Per Cent of Total	Rank	Number	Per Cent of Total	Rank
I.	Food and Lumber: Extraction and Processing	8,112.8	13.81	2	7,716.1	12.16	3	7,338.0	10.64	5	6,987.6	9.34	5	6,648.4	8.22	5
II.	Energy and Fuels	1,329.1	2.26	11	1,296.4	2.04	11	1,264.4	1.83	11.5	1,233.3	1.65	12	1,203.0	1.49	12
III.	Primary Metals: Mining and Closely Related Processing	993.4	1.69	13	1,018.4	1.60	13	1,044.2	1.51	13	1,070.6	1.43	13	1,097.6	1.36	13
IV.	Nonmetallic Minerals and Chemical Products	987.0	1.68	12	1,116.7	1.76	12	1,263.5	1.83	11.5	1,429.5	1.91	11	1,617.3	2.00	11
V.	Metal Fabrication	3,946.4	6.72	6	4,045.8	6.38	6	4,148.1	6.00	6	4,253.0	5.68	6	4,360.4	5.39	7
VI.	Defense	2,188.2	3.73	10	2,188.2	3.45	10	2,188.2	3.17	10	2,188.2	2.92	10	2,188.2	2.71	10
VII.	Other Manufacturing	6,961.8	11.85	4	7,316.9	11.53	5	7,690.0	11.15	4	8,082.0	10.80	4	8,494.1	10.51	4
VIII.	Construction	2,772.4	4.72	8	2,986.7	4.71	8	3,217.4	4.66	9	3,466.1	4.63	8	3,734.2	4.62	8
IX.	Government	7,229.4	12.61	3	8,991.2	14.17	2	10,939.6	15.86	2	12,682.3	16.95	2	14,002.5	17.32	2
X.	Transportation and Communication	3,277.0	5.58	7	3,277.0	5.16	7	3,277.0	4.75	8	3,277.0	4.38	9	3,277.0	4.05	9
XI.	Distribution	11,641.0	19.82	1	12,852.8	20.26	1	14,190.4	20.57	1	15,667.6	20.93	1	17,297.4	21.39	1
XII.	Finance	2,485.6	4.23	9	2,952.1	4.65	9	3,506.2	5.08	7	4,164.1	5.56	7	4,945.8	6.12	6
XIII.	Services	6,638.0	11.30	5	7,695.4	12.13	4	8,920.8	12.93	3	10,324.0	13.82	3	11,988.9	14.83	3
	Total Classified Employees	58,562.1	100.00		63,453.7	100.00		68,987.8	99.98		74,843.3	100.0		80,854.8	100.01	

[1] 1960 or average of 1959 and 1960.

Source: Tables 3 and 17.

CHART 8

PERCENTAGE DISTRIBUTION OF CLASSIFIED WORKERS
BY MAJOR CATEGORIES, OGDEN METROPOLITAN AREA,
UTAH, AND THE UNITED STATES
1965, 1970, 1975, 1980



Source: Tables 18, 19, and 20.

	Classified Employment		Growth
	Base	1980	Rate
Ogden Metropolitan Area	48,000	79,000	2.5
Utah	283,100	495,300	2.8
United States	58,562.1 (000's)	80,854.8 (000's)	1.6

The equivalent table for the base period may be found on page 54.

It may be rather startling to first discover that the growth rates in some cases differ significantly from the base period experience in view of the general position taken in this study that for the most part, projections would follow the base period experience. It should be remembered, however, that each of the 13 employment categories was projected separately and principally, but not exclusively, on the basis of the base period experience. The writers feel that the analysis of the disaggregated employment data in terms of the alternative statistics developed in this study has resulted in a more realistic evaluation of the growth characteristics of the base period than that given by a simple extrapolation of the aggregate experience. This method, in effect, has made it possible to avoid a number of the traps into which the customary approach to forecasting falls.

For the Ogden Metropolitan Area, the categories which are predicted to decline significantly in relative importance are Food and Lumber, and Transportation and Communication. The areas of significant increase are Manufacturing, Government, Distribution, Finance, and Services. It should also be indicated that these are the categories which might, on a priory grounds, be expected to increase as

the result of Ogden playing more of a metropolitan role for its portion of the Wasatch Front. Several other categories may show relative increases, but will not be significant because of their small absolute size.

For Utah, the areas of relative declining importance are Food and Lumber, Energy and Fuels, Primary Metals, and Transportation and Communication. Employment will significantly increase (in relative terms) in Government, Finance, and Services.

For the United States, the most significant growth categories are Nonmetallic Minerals, Government, Finance, and Services, whereas the principal declining categories are Food and Lumber, Energy and Fuels, and Transportation and Communication.

For all three levels of government, the shifts which will occur in relative importance can be seen by an examination of Tables 10 through 15 which indicate the relative importance in terms of rank of the various industry categories. Shifts in rankings can be traced through the period of the projection in these tables.

The projections of relative growth rates are consistent with the base period observations in that the State of Utah is growing somewhat faster than the Ogden Metropolitan Area and the latter is growing faster than the nation. It should be remembered that the State is affected very much by the rapidly growing Salt Lake Metropolitan Area with a projected annual growth rate of 3.4 per cent. The Ogden Metropolitan Area is growing more rapidly, of course, than the State outside the Salt Lake Metropolitan Area, but not as rapidly as the latter. In terms of the relationship between the Ogden Metropolitan Area and the State, an examination of the

location quotients indicates that only in the case of Defense, and Transportation and Communication does employment in the Ogden Metropolitan Area as a percentage of total classified employment exceed that of the State.

This is a somewhat surprising result. It is usually felt that the primary (or basic or export) industries of an area support the "service" industries. There is no question that the primary industries in the Ogden Metropolitan Area are defense and transportation (although it should be noted that projections of this study assume the latter to be a declining industry). These industries provide the surplus through export for the maintenance of other economic activity. In the case of the Ogden Metropolitan Area, they are not providing as much support for other types of economic activity as they are in the rest of the State. In 1960, for example, for the United States, one worker in 15 was employed in Distribution; for Utah, one in 14; for the Salt Lake Metropolitan Area, one in 10. But for the Ogden Metropolitan Area, only one in 18 was employed in Distribution. The results in Services were similar: for the United States, one worker in 27 was employed; for Utah, one in 28; for the Salt Lake Metropolitan Area, one in 21. But for the Ogden Metropolitan Area, only one in 41 was employed.

One hypothesis which the writers feel must be given considerable weight in explaining the above facts is that much of the population of the Ogden area takes advantage of the more extensive facilities offered in Salt Lake City for many types of economic activity. Thus, the basic industries (Transportation and Communication, and Defense, etc.) in the Ogden Metropolitan Area support some of the "service" industries in Salt Lake City. Table 21, "Comparison of the Relative Importance of Industrial Categories in the Ogden Metropolitan Area with the Same Categories in

TABLE 21

COMPARISON OF THE RELATIVE IMPORTANCE OF INDUSTRIAL CATEGORIES IN THE OGDEN METROPOLITAN AREA
WITH THE SAME CATEGORIES IN THE SALT LAKE METROPOLITAN AREA (LOCATION QUOTIENTS)
ACTUAL, 1952-1960; PROJECTED, 1965, 1970, 1975, 1980

	Category	1952		1953		1954		1955		1956		1957		1958	
		Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.
I.	Food and Lumber: Extraction and Processing														
	% O.M.A. / % S.L.M.A.	10.3 / 5.8	1.78	10.9 / 5.9	1.85	11.4 / 5.7	2.00	11.3 / 5.7	1.98	11.0 / 5.2	2.12	11.0 / 5.1	2.16	9.9 / 4.5	2.20
II.	Energy and Fuels														
	% O.M.A. / % S.L.M.A.	0.6 / 3.0	0.20	0.7 / 3.2	0.22	0.8 / 3.1	0.26	0.8 / 3.1	0.26	0.9 / 3.0	0.30	0.8 / 3.1	0.26	0.8 / 3.2	0.25
III.	Primary Metals: Mining and Closely Related Processing														
	% O.M.A. / % S.L.M.A.	0.01 / 8.0	0.001	0.03 / 8.0	0.003	0.1 / 7.7	0.012	0.1 / 7.5	0.013	0.1 / 8.1	0.012	0.1 / 7.7	0.012	0.03 / 6.3	0.004
IV.	Nonmetallic Minerals and Chemical Products														
	% O.M.A. / % S.L.M.A.	0.02 / 0.62	0.03	0.01 / 0.65	0.015	0.02 / 0.71	0.028	0.02 / 0.73	0.027	0.02 / 0.77	0.025	0.02 / 0.83	0.024	0.04 / 0.80	0.05
V.	Metal Fabrication														
	% O.M.A. / % S.L.M.A.	0.7 / 2.6	0.27	0.8 / 2.7	0.30	0.8 / 2.8	0.29	0.9 / 3.0	0.30	0.9 / 3.3	0.27	1.0 / 3.5	0.29	1.1 / 3.4	0.32
VI.	Defense														
	% O.M.A. / % S.L.M.A.	40.8 / 0.24	170.00	34.4 / 0.21	163.81	33.4 / 0.28	119.29	31.7 / 0.30	105.67	30.4 / 0.29	104.83	30.6 / 0.66	46.36	31.6 / 1.2	26.33
VII.	Other Manufacturing														
	% O.M.A. / % S.L.M.A.	1.8 / 4.1	0.44	1.9 / 4.4	0.43	2.0 / 4.0	0.50	2.1 / 4.0	0.53	2.0 / 3.9	0.51	2.0 / 3.9	0.51	2.6 / 4.0	0.65
VIII.	Construction														
	% O.M.A. / % S.L.M.A.	3.3 / 6.4	0.52	3.4 / 5.8	0.59	3.0 / 6.2	0.48	4.1 / 7.2	0.57	4.7 / 7.1	0.66	4.1 / 6.3	0.65	4.5 / 6.4	0.70
IX.	Government														
	% O.M.A. / % S.L.M.A.	11.2 / 14.0	0.80	15.0 / 14.1	1.06	14.1 / 14.4	0.98	13 6 / 14.0	0.97	14.8 / 13.9	1.06	15.4 / 14.3	1.08	14.8 / 15.3	0.97
X.	Transportation and Communication														
	% O.M A. / % S.L.M.A.	10.8 / 9.8	1.10	10.9 / 10.0	1.09	11.0 / 9.7	1.13	11.0 / 9.4	1.17	10.4 / 9.1	1.14	10.1 / 8.8	1.15	9.2 / 8.2	1.12
XI.	Distribution														
	% O.M.A. / % S.L M.A.	13.3 / 28.3	0.47	14.4 / 27.8	0.52	15.1 / 27.5	0.55	15.7 / 27.1	0.58	16.2 / 27.3	0.59	16.3 / 27.4	0.59	16.0 / 27.8	0.58
XII.	Finance														
	% O.M.A. / % S.L.M.A.	1.4 / 5.0	0.28	1.6 / 5.3	0.30	1.8 / 5.7	0.32	2.0 / 6.0	0.33	1.9 / 5.8	0.33	2.0 / 5.9	0.34	2.1 / 6.2	0.34
XIII.	Services														
	% O.M.A. / % S.L.M.A.	5.6 / 9.1	0.62	5.9 / 11.9	0.50	6.5 / 12.1	0.54	6.8 / 12.1	0.56	6.7 / 12.2	0.55	6.8 / 12.5	0.54	7.3 / 12.7	0.57

TABLE 21 (Cont'd)

COMPARISON OF THE RELATIVE IMPORTANCE OF INDUSTRIAL CATEGORIES IN THE OGDEN METROPOLITAN AREA WITH THE SAME CATEGORIES IN THE SALT LAKE METROPOLITAN AREA (LOCATION QUOTIENTS)
ACTUAL, 1952-1960; PROJECTED, 1965, 1970, 1975, 1980

	Category	1959		1960		1965		1970		1975		1980	
		Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.	Ratio	L.Q.
I.	Food and Lumber: Extraction and Processing												
	% O.M.A. / % S.L.M.A.	9.4 / 4.3	2.19	8.9 / 4.2	2.12	7.5 / 3.3	2.27	6.1 / 2.6	2.35	5.6 / 2.2	2.55	5.0 / 1.8	2.78
II.	Energy and Fuels												
	% O.M.A. / % S.L.M.A.	0.7 / 3.0	0.23	0.7 / 2.8	0.25	0.6 / 2.6	0.23	0.6 / 2.3	0.26	0.5 / 2.1	0.24	0.5 / 2.0	0.25
III.	Primary Metals: Mining and Closely Related Processing												
	% O.M.A. / % S.L.M.A.	0.03 / 5.0	0.006	0.02 / 5.9	0.003		a		a		a		a
IV.	Nonmetallic Minerals and Chemical Products												
	% O.M.A. / % S.L.M.A.	0.04 / 0.80	0.05	0.04 / 0.80	0.05		a		a		a		a
V.	Metal Fabrication												
	% O.M.A. / % S.L.M.A.	1.1 / 3.3	0.33	1.1 / 3.3	0.33	1.2 / 3.5	0.34	1.3 / 3.8	0.34	1.6 / 4.1	0.39	1.8 / 4.4	0.41
VI.	Defense												
	% O.M.A. / % S.L.M.A.	32.4 / 2.1	15.43	32.5 / 2.8	11.61	34.1 / 3.6	9.47	35.2 / 3.0	11.73	31.9 / 2.6	12.27	28.7 / 2.2	13.05
VII.	Other Manufacturing												
	% O.M.A. / % S.L.M.A.	2.6 / 4.1	0.63	2.8 / 4.2	0.67	2.9 / 4.3	0.67	3.1 / 4.6	0.67	3.4 / 4.8	0.71	3.7 / 5.1	0.73
VIII.	Construction												
	% O.M.A. / % S.L.M.A.	4.6 / 6.5	0.71	4.4 / 6.0	0.73	4.2 / 5.7	0.74	4.0 / 5.4	0.74	4.0 / 5.0	0.80	4.0 / 4.7	0.85
IX.	Government												
	% O.M.A. / % S.L.M.A.	14.8 / 15.3	0.97	14.8 / 15.0	0.99	15.8 / 15.7	1.01	16.5 / 16.7	0.99	18.2 / 17.6	1.03	19.9 / 18.4	1.08
X.	Transportation and Communication												
	% O.M.A. / % S.L.M.A.	9.2 / 7.8	1.18	9.0 / 7.4	1.22	7.4 / 6.4	1.16	6.1 / 5.6	1.09	5.5 / 4.8	1.15	5.0 / 4.2	1.19
XI.	Distribution												
	% O.M.A. / % S.L.M.A.	15.8 / 28.2	0.56	16.4 / 28.0	0.59	16.4 / 28.1	0.58	16.8 / 28.3	0.59	18.1 / 28.5	0 64	19.3 / 28.5	0.68
XII.	Finance												
	% O.M.A. / % S.L.M.A.	2.2 / 6.1	0.36	2.1 / 6.3	0.33	2.4 / 6.9	0.35	2.7 / 7.5	0.36	3.0 / 7.8	0 38	3.3 / 7.9	0.42
XIII.	Services												
	% O.M.A. / % S.L.M.A.	7.1 / 13.7	0.52	7.3 / 13.6	0.54	7.3 / 14.3	0.51	7.5 / 15.2	0.49	8.1 / 16.0	0.51	8.6 / 16.8	0.51

[a]Base numbers too small in the Ogden Metropolitan Area to make meaningful long-ter n projections.

Source: Derived from Table 4 and L. Nabers and J.J. Rasmussen, Employment and Population Analysis and Projections, Salt Lake Metropolitan Area, Utah and the United States, Table 4.

the Salt Lake Metropolitan Area," gives support to this hypothesis. The percentage employed in the Ogden Metropolitan Area in every category, except Food and Lumber (agriculture), Defense, and Transportation and Communication, is less than the percentage employed in the Salt Lake Metropolitan Area. To restate the hypothesis, basic economic activity in Ogden is supporting to some extent the increase in secondary activities and, hence, population in the Salt Lake Metropolitan Area; this tendency is strengthened by the nearness of the two metropolitan areas.

An examination of the diversification indexes for the period of projection indicates, until the 1980 period, a growing concentration in the leading categories. The Diversification Index for the Ogden Metropolitan Area is much higher than for the State and the United States. The reason for this is the predominant importance of defense. The reason why the DI declines for 1980 is because of the treatment of defense, ie., the assumption that the entire increase will occur in the first ten years. These results may be seen visually by reference to Charts 5, 6, and 7.

SECTION IV

POPULATION PROJECTIONS

As a background for the population projections of the Ogden Metropolitan Area and the State of Utah, a brief summary of some of the relevant population data of these areas will be given.

Historical Population Growth

The rate of population growth in the Ogden Metropolitan Area and Utah has varied considerably since the turn of the century. Both the actual population and the relative change for each decade since 1900 for these two areas and the United States are given in Table 22. It is seen that in the Ogden Metropolitan Area population nearly doubled between 1900 and 1920, increasing 72 per cent. However, between 1920 and 1940, the rate of growth slowed down considerably with a gain only of 32 per cent. During and following World War II, this area experienced very rapid growth with total population more than doubling (a gain of 124 per cent) between 1940 and 1960.

The same pattern prevailed for the State of Utah during this period but at lower rates of growth. Between 1900 and 1920 the State's population increased 62 per cent; between 1920 and 1940, only 22.5 per cent; and from 1940 to 1960, back up to a gain of 62 per cent.

The relative increase in the nation's population was roughly the same as Utah in the period of 1920 to 1940, but was considerably below both Utah and the Ogden Metropolitan Area in the periods of 1900 to 1920 and 1940 to 1960. The

percentage gains for the United States were as follows: 1900 to 1920, 39 per cent; 1920 to 1940, 24.5 per cent; and 1940 to 1960, 35.5 per cent.

TABLE 22

POPULATION GROWTH, OGDEN METROPOLITAN AREA
UTAH AND UNITED STATES, 1900 to 1960

	Ogden Metropolitan Area							
Census Date	Weber County	North Davis	Total	Index	Utah Number	Utah Index	United States[a] Number	United States[a] Index
1900	25,239	3,394	28,633	100	276,749	100	75,994,575	100
1910	35,179	4,803	39,982	140	373,351	135	91,972,266	121
1920	43,463	5,665	49,128	172	449,396	162	105,710,620	139
1930	52,172	7,038	59,210	207	507,847	184	122,775,046	162
1940	56,714	7,878	64,592	226	550,310	199	131,669,275	173
1950	83,319	18,469	101,788	355	688,862	249	150,697,361	198
1960	110,744	33,836	144,580	505	890,627	322	178,464,236	235

[a] Excludes Alaska and Hawaii in all years.

Source: U. S. Bureau of the Census.

An important consequence of the above patterns of population growth is that the Ogden Metropolitan Area is becoming an increasingly larger share of the State's population and also that Utah's population is becoming a larger share of the nation. These changes are given in Table 23. It is seen that the Ogden Metropolitan Area has increased from 10.3 per cent of Utah's population in 1900 to 16.2 per cent in 1960, with only a small amount of change between 1910 and 1940.

Utah's share of the nation's population increased from 0.36 per cent in 1900 to an even 0.50 per cent in 1960, also with almost no change from 1910 to 1940. It is of some interest to note that since 1910 Utah's share of the population in the eight Mountain States has remained virtually constant at about 13.5 per cent. The smaller increases in several of these states are offset by the larger increases in such states as Arizona and Nevada.

TABLE 23

RELATIVE IMPORTANCE OF POPULATION IN THE OGDEN METROPOLITAN AREA AND UTAH, 1900 to 1960

Census Date	Ogden Metropolitan Area as Per Cent of Utah	Utah as a Per Cent of	
		Mountain States	United States
1900	10.3	16.5	0.36
1910	10.7	14.2	0.41
1920	10.9	13.5	0.43
1930	11.7	13.7	0.41
1940	11.7	13.3	0.42
1950	14.8	13.5	0.46
1960	16.2	13.1	0.50

Source: Computed from U. S. Bureau of Census data.

Closely correlated with population growth patterns described above are the changes in net migration for Utah. It is seen in Table 24 that in the two decades preceding World War II when population in Utah was increasing very slowly, net out-

migration was substantial. In the other decades when population was increasing the most, there was net in-migration in Utah.

TABLE 24

NET MIGRATION OF TOTAL RESIDENT POPULATION IN UTAH
1900 to 1960

Decade	Net Migration
1900-1910	+24,900
1910-1920	- 200
1920-1930	-30,800
1930-1940	-30,500
1940-1950	+ 9,000
1950-1960	+10,000

Source: Decades 1950-1960 and 1940-1950 from U. S. Bureau of Census, Current Population Reports, p. 25, No. 227, April 26, 1961; all prior decades from U. S. Census Bureau, Historical Statistics of the United States, p. 45.

Unless offset by net out-migration, the birth rates and death rates would produce a more rapidly growing population in Utah than in the nation. It is seen in Table 25 that the birth rates in Utah are consistently higher than those for the United States and that the death rates are consistently lower.

TABLE 25

BIRTH AND DEATH RATES IN UTAH AND UNITED STATES
SELECTED YEARS, 1910 to 1960

	Birth Rate		Death Rate	
Year	Utah	U. S.	Utah	U. S.
1910	30.7	30.1	10.8	14.7
1920	31.2	27.7	11.5	13.0
1930	25.5	21.3	9.9	11.3
1940	25.2	19.4	8.8	10.8
1950	31.1	24.1	7.2	9.6
1955	31.5	25.0	6.6	9.3
1960	29.2	23.6	6.9	9.5

Source: U. S. Bureau of the Census, Historical Statistics of the United States and Statistical Abstract of the United States.

The relationship between population growth and employment opportunities is clearly evident in the above relative rates of population growth for Utah and the Ogden Metropolitan Area. In the two decades prior to World War II, for example, when there was not much expansion of industrial activities in these areas, there was net out-migration of population (many of whom were young people), and consequently, with a scarcity of jobs, the population growth of Utah was slowed down considerably. The Ogden Metropolitan Area fared a little better because of the steady shift of population from rural areas to urban areas.

The impact of World War II on the whole Utah economy, but especially on the Wasatch Front area, is well known. Thousands of new jobs resulted from the war-stimulated activities, net in-migration of population occurred and population growth increased markedly. The rise and expansion of the missile industry and related activities in Utah have continued the growth in jobs and population.

This expansion has been of such magnitude as to keep the rate of unemployment during most of the years between 1952 and 1960 in the Ogden Metropolitan Area and Utah below that of the United States. In Table 26 it is seen that in seven of nine years the unemployment rate in the Ogden Metropolitan Area was below that of the State, while the rate in Utah was below that of the nation in eight of the nine years. Continuation of these favorable comparisons will depend largely upon the rate of expansion of new jobs in the State and Ogden Metropolitan Area.

Population Projections

As stated at the beginning of the report, this study makes the assumption that the ultimate population size of a given region will be determined by the demand for

TABLE 26

AMOUNT AND RATE OF UNEMPLOYMENT IN THE OGDEN METROPOLITAN AREA
UTAH AND UNITED STATES, 1952-1960

Year	Ogden Metropolitan Area			Utah			United States		
	Civilian Labor Force	Unemployment		Civilian Labor Force	Unemployment		Civilian Labor Force	Unemployment	
		Amount	Rate		Amount	Rate	(000 omitted)	Amount	Rate
1952	51,880	642	1.2	278,900	8,600	3.1	62,966	1,932	3.1
1953	50,175	1,000	2.0	282,000	9,000	3.2	63,815	1,870	2.9
1954	46,167	1,866	4.0	278,200	14,000	5.0	64,468	3,578	5.6
1955	46,818	1,601	3.4	291,200	11,500	3.9	65,848	2,904	4.4
1956	47,880	1,696	3.5	297,000	10,000	3.4	67,530	2,822	4.2
1957	48,131	2,102	4.4	303,500	10,900	3.6	67,946	2,936	4.3
1958	49,111	1,973	4.0	311,200	16,200	5.2	68,647	4,681	6.8
1959	51,920	1,570	3.0	324,500	14,400	4.4	69,394	3,813	5.5
1960	53,802	2,187	4.1	334,000	15,500	4.6	70,306	3,913	5.6

Source: Labor force--Tables 1, 2 and 3; unemployment--U. S. Department of Labor and Utah Department of Employment Security.

labor within that region, i.e., the number of jobs available in the basic industries and non-service governmental activities together with the ancillary jobs in the various service industries that arise in connection with basic industry employment. Hence, with an estimate of the total number of workers that a region can sustain and an estimate of the labor force/population ratio, it is a simple matter to estimate the total population of the region. The quality of the population estimates depend primarily, of course, on the accuracy of the employment estimates.

As also noted at the beginning of the report, this approach disregards short run cyclical fluctuations and is applicable only to periods of time of sufficient duration that the growth factors inherent in a region's economy can work themselves out.

Table 27 gives the population estimates for each five-year period to 1980 for all three levels of government and also gives the essential data for the determination of the estimates.

The second column in this table, headed "Classified Employees," is derived from Tables 18, 19 and 20 in Section III. These three tables summarize the estimates of classified employees for each five-year interval from 1960 to 1980. One slight difference should be noted. The figures in row one for each level of government are the actual numbers of classified employees for 1960 and are derived from Tables 1, 2 and 3, whereas the "Base" figures in Tables 18, 19 and 20 may be either 1960 or an average of 1959 and 1960. For the purpose of relating workers to population, the actual number of employees in 1960 is more relevant than "Base" employees; as a starting point for estimating classified employees, "Base" figures

TABLE 27

ESTIMATED CIVILIAN POPULATION, OGDEN METROPOLITAN AREA, UTAH AND UNITED STATES
1965, 1970, 1975 and 1980

Year	Classified Employees	Ratio Non-Classified	Civilian Labor Force	Population Multipliers	Civilian Population
			Ogden Metropolitan Area		
1960[a]	48,500	10.8%	53,800	2.67	144,600
1965	55,600	11.0%	61,700	2.67	164,700
1970	64,600	11.0%	71,700	2.67	191,400
1975	71,200	11.0%	79,000	2.67	210,900
1980	79,100	11.0%	87,800	2.67	234,400
			Utah		
1960[a]	286,400	16.6%	334,000	2.67	893,000
1965	325,300	17.0%	380,600	2.67	1,016,200
1970	376,800	17.0%	440,900	2.65	1,168,400
1975	430,000	17.0%	503,100	2.65	1,333,200
1980	495,300	17.0%	579,500	2.63	1,524,100
			United States		
	(Thous.)		(Thous.)		(Thous.)
1960[a]	58,807	19.5%	70,306	2.52	177,387
1965	63,453.7	19.5%	75,827.2	2.54	192,601
1970	68,987.8	19.5%	82,440.4	2.56	211,047
1975	74,843.3	19.5%	89,437.7	2.58	230,749
1980	80,854.8	19.5%	96,621.5	2.60	251,216

[a]U. S. Census, 1960.

Source: Based largely on data in Tables 1, 2, 3, 16, 18, 19 and 20.

were more relevant than actual 1960 figures alone. The estimates of classified employees in column two of Table 27 are, of course, the end product of the greater part of this study.

As discussed in the last two or three pages of Section II, some 10 to 16 per cent of the civilian labor force is not included in total classified employees. Hence, the third column, "Ratio Non-classified," is the percentage addition to the number of classified employees to account for the self-employed and unpaid family workers, private household workers, unemployed, and an adjustment for multiple job holding and other discrepancies. Inasmuch as there is little basis for any predictable change in this group as a percentage of total, it is assumed that this group will remain a constant percentage of the classified employees for each level of government. The approximate average percentage of 1958, 1959 and 1960 for each of the three levels of government is used and is applied to total classified employees to obtain the civilian labor force for each level in column four.

The population multipliers in column five are based on the relationship between civilian labor force and civilian population in the decade of the 1950's as shown in Table 16 above, and the anticipated trends in this relationship. The three multipliers for 1960 are taken directly from Table 16.

Since the Ogden Metropolitan Area is expected to include about the same percentage of the State's population in the next 20 years, the multiplier is held constant throughout the projection period. The rural population in Utah is expected to continue to decline relatively--if not absolutely also--to total State population; hence, the average size of the family can be expected to continue to drop some

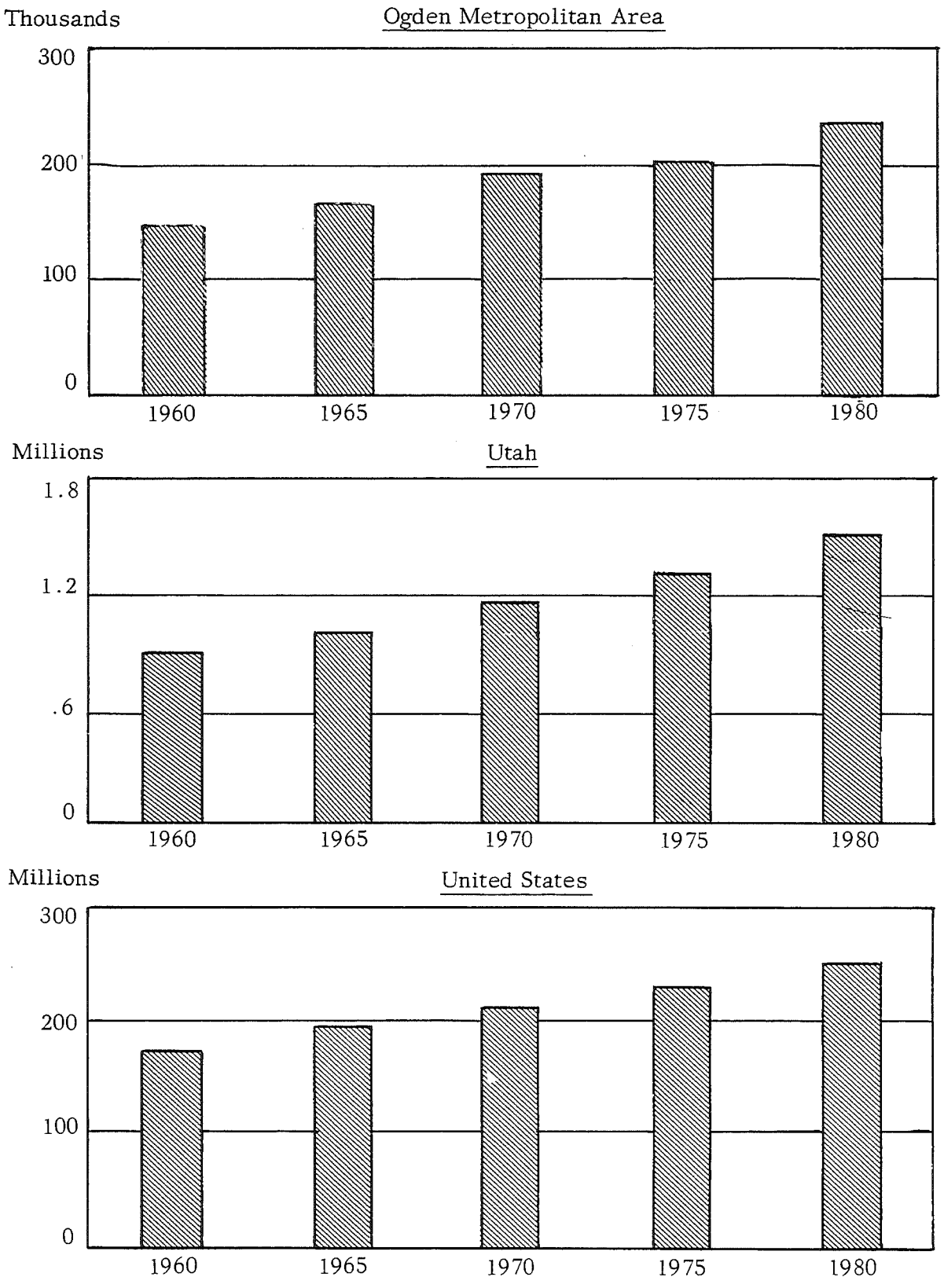
and the multiplier is decreased slightly. The multiplier for the United States has shown a steady increase due perhaps to a rising share of older people in the population, higher real income, e[illegible] some further increase is expected.

The product of the civilian labor force and the population multipliers gives the estimated population in the last column of Table 27 for 1965, 1970, 1975 and 1980 for the Ogden Metropolitan Area, Utah and the United States. Chart 9 shows graphically these population projections. Although the population of the Ogden Metropolitan Area increased more rapidly than the State from 1940 to 1960, the rate of increase for 1960 to 1980 is expected to be about the same as the State of Utah due to the leveling off in defense activities. The populations of both the Ogden Metropolitan Area and Utah are projected to gain more rapidly than the nation.

These relative changes are readily seen in Table 28. Civilian population in the Ogden Metropolitan Area is estimated to increase 62 per cent between 1960 and 1980--rising from 144,600 to 234,000--and to remain at about 16 per cent of the State's population, dropping to 15 per cent in 1980. Utah's estimated population increases from 893,000 in 1960 to more than 1.5 million in 1980, a gain of 71 per cent, and rises from 0.50 per cent of the nation s population in 1960 to 0.61 per cent in 1980. The civilian population of the United States is estimated to increase from 177.4 million in 1960 to 251.2 million in 1980, a gain of 42 per cent. These differential rates of growth are clearly seen in Chart 10.

CHART 9

ESTIMATED CIVILIAN POPULATION OGDEN METROPOLITAN AREA
UTAH AND UNITED STATES 1965. 1970, 1975 and 1980

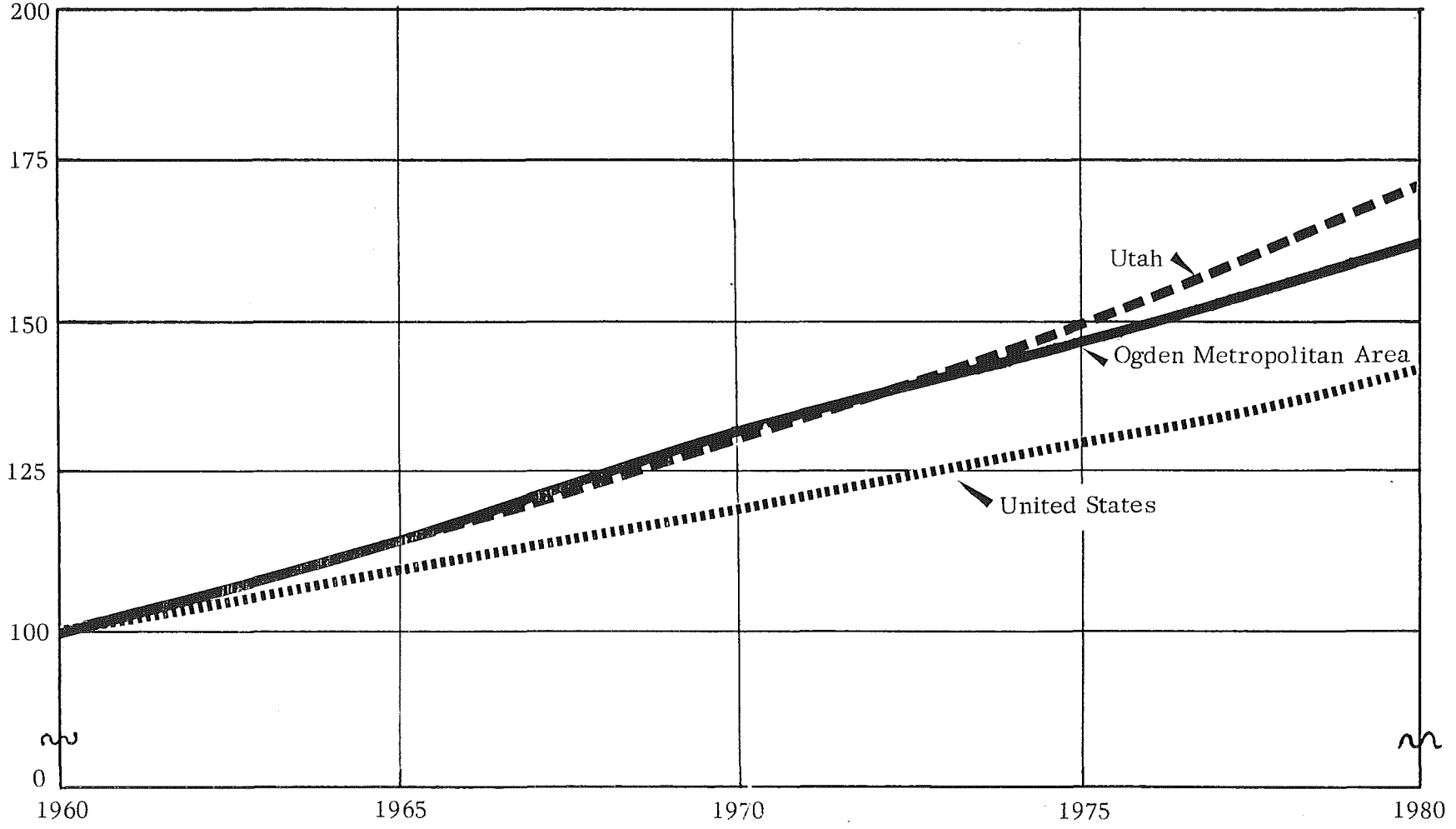


Source: Table 27

CHART 10

INDEX OF ESTIMATED CIVILIAN POPULATION GROWTH

Ogden Metropolitan Area, Utah, and United States 1965, 1970, 1975, 1980



Source: Table 28

TABLE 28

RELATIVE INCREASES IN CIVILIAN POPULATION, SALT LAKE METROPOLITAN AREA, UTAH AND UNITED STATES
1965, 1970, 1975 and 1980

	Ogden Metropolitan Area		Utah		United States
Year	Index	Per Cent of Utah	Index	Per Cent of U. S.	Index
1960	100	16	100	0.50	100
1965	114	16	114	0.53	109
1970	132	16	131	0.55	119
1975	146	16	149	0.58	130
1980	162	15	171	0.61	142

Source: Computed from data in Table 27.

It should be noted, of course, that the population estimates in Table 27 refer to civilian population. To get the total resident population of each level of government it is necessary to make some estimate of the number in the armed forces in each area. This factor will have some but not too much influence on the population of the Ogden Metropolitan Area. It is estimated that in the neighborhood of half of the State's military personnel are in this area. For the State as a whole, the number of armed forces personnel has been between three and five thousand during most of the last decade and only three to four thousand in the last five years. For the United States, the average number in the armed forces has averaged 2,062,000. However, in the last three years, the number of armed forces personnel has held quite steady at about 1,800,000.

Perhaps the most reasonable assumption to make with respect to this element of the total resident population is that the number in the armed forces will remain about constant for each of the three levels of government--i.e., some 1,500 to 2,000 in the Ogden Metropolitan Area, 3,000 or 4,000 in the State and about 1.8 million in the United States.

After arriving at the estimates of civilian population in Table 27, solely on the basis of the estimated number of workers that seemed reasonable for each level of government, the results were compared with various other estimates independently made. These comparisons are shown in Table 29. The population estimates of this study for the Ogden Metropolitan Area, for all four future years, are very close to the estimates derived from a straight projection at an annual growth rate of 2.5 per cent. The population estimates of this study for Utah are a little higher than most of the other estimates. However, two of the other studies were made several years ago--U. S. Bureau of the Census, 1957, and the Stanford Research Institute, 1955. The estimates of this study are fairly close to the middle projections made in 1960 for the U. S. Senate Select Committee on National Water Resources. This was the only available estimate for 1980.

For the United States, four series of population estimates made by the U. S. Bureau of the Census in 1958 and three series in the special estimates made by the Census Bureau in 1960 are available for comparison with those of this study. It is interesting to note that for three of the four years -- 1970, 1975, and 1980 -- the estimates of this study fall almost exactly at the midpoint of the four 1958 Census Bureau series. For 1965, the figure fell between the two lowest series of the Census Bureau. In comparison with the special Census Bureau projections in 1960, the

TABLE 29

COMPARISON OF OTHER POPULATION ESTIMATES WITH THOSE OF THIS STUDY, 1965, 1970, 1975 and 1980

	Ogden Metropolitan Area				
	This	Projection of 1960 Population at Annual Growth Rate of[a]			
Year	Study	2 Per Cent	2.25 Per Cent	2.5 Per Cent	2.75 Per Cent
1965	164,700	159,600	161,600	163,600	165,600
1970	191,400	176,200	180,600	185,100	189,600
1975	210,900	194,600	201,900	209,400	217,200
1980	234,400	214,800	225,600	236,900	248,300

	Utah (thousands)[b]							
	This	U.S. Bureau of the Census[c]				Stanford	Special U.S. Census[e]		
Year	Study	1	2	3	4	Research[d]	Low	Middle	High
1965	1,016	1,024	977	978	953	986	---	---	---
1970	1,168	1,151	1,114	1,082	1,031	1,099	1,105	1,138	1,220
1975	1,333		1,247			1,239	---	---	---
1980	1,524	---	---	---	---	---	1,304	1,414	1,610

	United States (millions)							
	This	U.S. Bureau of the Census[f]				Special U.S. Census[e]		
Year	Study	I	II	III	IV	Low	Middle	High
1965	192.6	199.0	195.7	193.6	191.5	---	---	---
1970	211.0	219.5	213.8	208.2	202.5	201.0	207.0	221.9
1975	230.7	243.9	235.2	225.6	215.8	---	---	---
1980	251.2	272.6	260.0	245.4	230.8	224.9	243.8	277.6

[a]Since no independent estimates are available, this method of a straight percentage increase provides a rough check on the projections of this study.

[b]In addition to the population estimates for Utah shown below, see also those prepared by the University of Utah Bureau of Economic and Business Research, Utah Economic and Business Review, University of Utah, December 1957, p. 2 and January 1958, p. 6.

[c]Current Population Reports, P-25, No. 160, August 9, 1957; the single figure for 1975 is an unpublished estimate prepared for the U. S. Bureau of Public Roads. Includes members of the armed forces.

[d]Howard C. Nielsen, Population Trends in the United States Through 1975 (Stanford Research Institute, Menlo Park, California, 1955).

[e]Select Committee on National Water Resources, U.S. Senate, Water Resources Activities in the United States, Population Projections and Economic Assumptions, Committee Print No. 5, March 1960. Alaska and Hawaii not included in the U.S. totals.

[f]Current Population Reports, P-25, No. 187, November 10, 1958.

estimates of this study were just above the middle series of the Census Bureau for both 1970 and 1980. It should be remembered, of course, that the estimates of this study include civilian population only and would be about two millions higher (assuming the average number of recent years) if members of the armed forces stationed in the United States were included.

On the whole, the writers feel that the above comparisons provide substantial verification of the basic assumption that the population of a given region is largely determined by the number of jobs available and of the techniques employed in the estimating procedures. The fact that the population estimates of this study generally fell within the range, and near midpoint or below, of the estimates made by the standard population projection procedures gives added significance to the results obtained in this study. The population estimates for Utah, although a little higher than several other projections, are believed to be close enough to such estimates to be satisfactory.

APPENDIX I

BASIC DATA FOR COMPUTATION OF DIVERSIFICATION INDEXES
OGDEN METROPOLITAN AREA, UTAH AND UNITED STATES
Actual 1952 to 1960; Projected 1965 to 1980

Ogden Metropolitan Area

Category		Per Cent of Total	Cumulative
1952			
VI.	Defense	40.8	40.8
XI.	Distribution	13.3	54.1
IX.	Government	11.2	65.2
X.	Trans. & Comm.	10.8	76.1
I.	Food & Lumber: Extraction & Processing	10.3	86.4
XIII.	Services	5.6	92.0
VIII.	Construction	3.3	95.3
VII.	Other Mfg.	1.8	97.1
XII.	Finance	1.4	98.5
V.	Metal Fabrication	0.7	99.2
II.	Energy & Fuels	0.6	99.8
IV.	Nonmetallic Min. & Chem. Products	0.0	99.8
III.	Primary Metals: Mining & Closely Rel. Processing	0.0	99.8
			1,104.2

$$DI = \frac{1,104.2 - 700}{600} = 67.38$$

Category		Per Cent of Total	Cumulative
1953			
VI.	Defense	34.4	34.4
IX.	Government	15.0	49.4
XI.	Distribution	14.4	63.8
X.	Trans. & Comm.	10.9	74.7
I.	Food & Lumber: Extraction & Processing	10.9	85.6
XIII.	Services	5.9	91.5
VIII.	Construction	3.4	94.9
VII.	Other Mfg.	1.9	96.8
XII.	Finance	1.6	98.4
V.	Metal Fabrication	0.8	99.2
II.	Energy & Fuels	0.7	99.9
III.	Primary Metals: Mining & Closely Rel. Processing	0.0	99.9
IV.	Nonmetallic Min. & Chem. Products	0.0	99.9
			1,088.4

$$DI = \frac{1,088.4 - 700}{600} = 64.73$$

Category		Per Cent of Total	Cumulative
1954			
VI.	Defense	33.4	33.4
XI.	Distribution	15.1	48.5
IX.	Government	14.1	62.6
I.	Food & Lumber: Extraction & Processing	11.4	74.0
X.	Trans. & Comm.	11.0	85.0
XIII.	Services	6.5	91.5
VIII.	Construction	3.0	94.5
VII.	Other Mfg.	2.0	96.5
XII.	Finance	1.8	98.3
V.	Metal Fabrication	0.8	99.1
II.	Energy & Fuels	0.8	99.0
III.	Primary Metals: Mining & Closely Rel. Processing	0.1	100.0
IV.	Nonmetallic Min. & Chem. Products	0.0	100.0
			1,083.3

$$DI = \frac{1,083.3 - 700}{600} = 63.88$$

Category		Per Cent of Total	Cumulative
1955			
VI.	Defense	31.7	31.7
XI.	Distribution	15.7	47.4
IX.	Government	13.6	61.0
I.	Food & Lumber: Extraction & Processing	11.3	72.3
X.	Trans. & Comm.	11.0	83.3
XIII.	Services	6.8	90.1
VIII.	Construction	4.1	94.2
VII.	Other Mfg.	2.1	96.3
XII.	Finance	2.0	98.3
V.	Metal Fabrication	0.9	99.2
II.	Energy & Fuels	0.8	100.0
III.	Primary Metals: Mining & Closely Rel. Processing	0.1	100.1
IV.	Nonmetallic Min. & Chem. Products	0.0	100.1
			1,074.0

$$DI = \frac{1,074.0 - 700}{600} = 62.33$$

Ogden Metropolitan Area (Cont'd)

Category		Per Cent of Total	Cumulative
	1956		
VI.	Defense	30.4	30.4
XI.	Distribution	16.2	46.6
IX.	Government	14.8	61.4
I.	Food & Lumber: Extraction & Processing	11.0	72.4
X.	Trans. & Comm.	10.4	82.8
XIII.	Services	6.7	89.5
VIII.	Construction	4.7	94.2
VII.	Other Mfg.	2.0	96.2
XII.	Finance	1.9	98.1
V.	Metal Fabrication	0.9	99.0
II.	Energy & Fuels	0.9	99.9
III.	Primary Metals: Mining & Closely Rel. Processing	0.1	100.0
IV.	Nonmetallic Min. & Chem. Products	0.0	100.0
			1,070.5

$$DI = \frac{1,070.5 - 700}{600} = 61.75$$

Category		Per Cent of Total	Cumulative
	1957		
VI.	Defense	30.6	30.6
XI.	Distribution	16.3	46.9
IX.	Government	15.4	62.3
I.	Food & Lumber: Extraction & Processing	11.0	73.3
X.	Trans. & Comm.	10.1	83.4
XIII.	Services	6.8	90.2
VIII.	Construction	4.1	94.3
VII.	Other Mfg.	2.0	96.3
XII.	Finance	2.0	98.3
V.	Metal Fabrication	1.0	99.3
II.	Energy & Fuels	0.8	100.1
III.	Primary Metals: Mining & Closely Rel. Processing	0.1	100.2
IV.	Nonmetallic Min. & Chem. Products	0.0	100.2
			1,075.4

$$DI = \frac{1,075.4 - 700}{600} = 62.57$$

Category		Per Cent of Total	Cumulative
	1958		
VI.	Defense	31.6	31.6
XI.	Distribution	16.0	47.6
IX.	Government	14.8	62.4
I.	Food & Lumber: Extraction & Processing	9.9	72.3
X.	Trans. & Comm.	9.2	81.5
XIII.	Services	7.3	88.8
VIII.	Construction	4.5	93.3
VII.	Other Mfg.	2.6	95.9
XII.	Finance	2.1	98.0
V.	Metal Fabrication	1.1	99.1
II.	Energy & Fuels	0.8	99.9
IV.	Nonmetallic Min. & Chem. Products	0.0	99.9
III.	Primary Metals: Mining & Closely Rel. Processing	0.0	99.9
			1,070.2

$$DI = \frac{1,070.2 - 700}{600} = 61.70$$

Category		Per Cent of Total	Cumulative
	1959		
VI.	Defense	32.4	32.4
XI.	Distribution	15.8	48.2
IX.	Government	14.8	63.0
I.	Food & Lumber: Extraction & Processing	9.4	72.4
X.	Trans. & Comm.	9.2	81.6
XIII.	Services	7.1	88.7
VIII.	Construction	4.6	93.3
VII.	Other Mfg.	2.6	95.9
XII.	Finance	2.2	98.1
V.	Metal Fabrication	1.1	99.2
II.	Energy & Fuels	0.7	99.9
IV.	Nonmetallic Min. & Chem. Products	0.0	99.9
III.	Primary Metals: Mining & Closely Rel. Processing	0.0	99.9
			1,072.5

$$DI = \frac{1,072.5 - 700}{600} = 62.08$$

Ogden Metropolitan Area (Cont'd)

Category		Per Cent of Total	Cumulative
	1975		
VI.	Defense	31.9	31.9
IX.	Government	18.2	50.1
XI.	Distribution	18.1	68.2
XIII.	Services	8.1	76.3
I.	Food & Lumber: Extraction & Processing	5.6	81.9
X.	Trans. & Comm.	5.5	87.4
VIII.	Construction	4.0	91.4
VII.	Other Mfg.	3.4	94.8
XII.	Finance	3.0	97.8
V.	Metal Fabrication	1.6	99.4
II.	Energy & Fuels	0.5	99.9
IV.	Nonmetallic Min. & Chem. Products	0.0	99.9
III.	Primary Metals: Mining & Closely Rel. Processing	0.0	99.9
			1,078.9

$$DI = \frac{1,078.9 - 700}{600} = 63.15$$

Category		Per Cent of Total	Cumulative
	1980		
VI.	Defense	28.7	28.7
IX.	Government	19.9	48.6
XI.	Distribution	19.3	67.9
XIII.	Services	8.6	76.5
I.	Food & Lumber: Extraction & Processing	5.0	81.5
X.	Trans. & Comm.	5.0	86.5
VIII.	Construction	4.0	90.5
VII.	Other Mfg.	3.7	94.2
XII.	Finance	3.3	97.5
V.	Metal Fabrication	1.8	99.3
II.	Energy & Fuels	0.5	99.8
IV.	Nonmetallic Min. & Chem. Products	0.0	99.8
III.	Primary Metals: Mining & Closely Rel. Processing	0.0	99.8
			1,070.6

$$DI = \frac{1,070.6 - 700}{600} = 61.77$$

Utah

Category		Per Cent of Total	Cumulative
	1952		
XI.	Distribution	20.0	20.0
I.	Food & Lumber: Extraction & Processing	14.5	34.5
IX.	Government	12.2	46.7
VI.	Defense	12.0	58.7
XIII.	Services	9.1	67.8
X.	Trans. & Comm.	8.4	76.2
III.	Primary Metals: Mining & Closely Rel. Processing	6.9	83.1
VIII.	Construction	5.0	88.1
II.	Energy & Fuels	3.6	91.7
VII.	Other Mfg.	3.2	94.9
XII.	Finance	3.0	97.9
V.	Metal Fabrication	1.5	99.4
IV.	Nonmetallic Min. & Chem. Products	0.6	100.0
			959.0

$$DI = \frac{959.0 - 700}{600} = 43.2$$

Category		Per Cent of Total	Cumulative
	1953		
XI.	Distribution	20.4	20.4
I.	Food & Lumber: Extraction & Processing	14.7	35.1
IX.	Government	13.8	48.9
XIII.	Services	9.4	58.3
VI.	Defense	9.2	67.5
X.	Trans. & Comm.	8.5	76.0
III.	Primary Metals: Mining & Closely Rel. Processing	7.0	83.0
VIII.	Construction	4.6	87.6
II.	Energy & Fuels	3.8	91.4
VII.	Other Mfg.	3.3	94.7
XII.	Finance	3.1	97.8
V.	Metal Fabrication	1.6	99.4
IV.	Nonmetallic Min. & Chem. Products	0.6	100.0
			960.1

$$DI = \frac{960.1 - 700}{600} = 43.3$$

Utah (Cont'd)

Category		Per Cent of Total	Cumulative
	1954		
XI.	Distribution	21.0	21.0
IX.	Government	14.0	35.0
I.	Food & Lumber: Extraction & Processing	14.4	49.4
XIII.	Services	9.8	59.2
VI.	Defense	8.2	67.4
X.	Trans. & Comm.	8.1	75.5
III.	Primary Metals: Mining & Closely Rel. Processing	7.0	82.5
VIII.	Construction	4.9	87.4
II.	Energy & Fuels	3.6	91.0
XII.	Finance	3.5	94.5
VII.	Other Mfg.	3.1	97.6
V.	Metal Fabrication	1.7	99.3
IV.	Nonmetallic Min. & Chem. Products	0.7	100.0
			959.8

$$DI = \frac{959.8 - 700}{600} = 43.3$$

Category		Per Cent of Total	Cumulative
	1955		
XI.	Distribution	20.8	20.8
I.	Food & Lumber: Extraction & Processing	13.9	34.7
IX.	Government	13.7	48.4
XIII.	Services	10.0	58.4
X.	Trans. & Comm.	7.9	66.3
VI.	Defense	7.7	74.0
III.	Primary Metals: Mining & Closely Rel. Processing	7.5	81.5
VIII.	Construction	5.8	87.3
XII.	Finance	3.7	91.0
II.	Energy & Fuels	3.3	94.3
VII.	Other Mfg.	3.1	97.4
V.	Metal Fabrication	1.8	99.2
IV.	Nonmetallic Min. & Chem. Products	0.7	99.9
			953.2

$$DI = \frac{953.2 - 700}{600} = 42.2$$

Category		Per Cent of Total	Cumulative
	1956		
XI.	Distribution	21.1	21.1
IX.	Government	14.0	35.1
I.	Food & Lumber: Extraction & Processing	13.1	48.2
XIII.	Services	10.0	58.2
III.	Primary Metals: Mining & Closely Rel. Processing	7.7	65.9
X.	Trans. & Comm.	7.6	73.5
VI.	Defense	7.2	80.7
VIII.	Construction	6.2	86.9
XII.	Finance	3.6	90.5
II.	Energy & Fuels	3.4	93.9
VII.	Other Mfg.	3.2	97.1
V.	Metal Fabrication	2.1	99.2
IV.	Nonmetallic Min. & Chem. Products	0.8	100.0
			950.3

$$DI = \frac{950.3 - 700}{600} = 41.7$$

Category		Per Cent of Total	Cumulative
	1957		
XI.	Distribution	21.2	21.2
IX.	Government	14.6	35.8
I.	Food & Lumber: Extraction & Processing	12.5	48.3
XIII.	Services	10.3	58.6
III.	Primary Metals: Mining & Closely Rel. Processing	7.5	66.1
X.	Trans. & Comm.	7.4	75.3
VI.	Defense	7.0	80.5
VIII.	Construction	5.7	86.2
II.	Energy & Fuels	3.8	90.0
XII.	Finance	3.7	93.7
VII.	Other Mfg.	3.1	96.8
V.	Metal Fabrication	2.1	98.9
IV.	Nonmetallic Min. & Chem. Products	0.8	99.7
			951.1

$$DI = \frac{951.1 - 700}{600} = 41.9$$

Utah (Cont'd)

Category	Per Cent of Total	Cumulative
1958		
XI. Distribution	21.5	21.5
IX. Government	15.2	36.7
I. Food & Lumber: Extraction & Processing	12.3	49.0
XIII. Services	10.6	59.6
VI. Defense	7.8	67.4
X. Trans. & Comm.	7.1	74.5
III. Primary Metals: Mining & Closely Rel. Processing	6.2	80.7
VIII. Construction	5.7	86.4
XII. Finance	3.8	90.2
II. Energy & Fuels	3.6	93.8
VII. Other Mfg.	3.1	96.9
V. Metal Fabrication	2.2	99.1
IV. Nonmetallic Min. & Chem. Products	0.8	99.9
		955.7

$$DI = \frac{955.7 - 700}{600} = 42.6$$

Category	Per Cent of Total	Cumulative
1959		
XI. Distribution	22.0	22.0
IX. Government	15.3	37.3
I. Food & Lumber: Extraction & Processing	11.6	48.9
XIII. Services	11.0	59.9
VI. Defense	9.0	68.9
X. Trans. & Comm.	6.9	75.8
VIII. Construction	5.8	81.6
III. Primary Metals: Mining & Closely Rel. Processing	5.2	86.8
XII. Finance	4.0	90.8
II. Energy & Fuels	3.3	94.1
VII. Other Mfg.	3.1	97.2
V. Metal Fabrication	2.0	99.2
IV. Nonmetallic Min. & Chem. Products	0.8	100.0
		962.5

$$DI = \frac{962.5 - 700}{600} = 43.75$$

Category	Per Cent of Total	Cumulative
1960		
XI. Distribution	21.9	21.9
IX. Government	15.6	37.5
XIII. Services	11.2	48.7
I. Food & Lumber: Extraction & Processing	11.1	59.8
VI. Defense	9.3	69.1
X. Trans. & Comm.	6.5	75.6
III. Primary Metals: Mining & Closely Rel. Processing	5.8	81.4
VIII. Construction	5.3	86.7
XII. Finance	3.9	90.6
VII. Other Mfg.	3.2	93.8
II. Energy & Fuels	3.1	96.9
V. Metal Fabrication	2.0	98.9
IV. Nonmetallic Min. & Chem. Products	0.8	99.7
		960.6

$$DI = \frac{960.6 - 700}{600} = 43.43$$

Utah (Cont'd)

Category	Per Cent of Total	Cumulative
1965		
XI. Distribution	22.0	22.0
IX. Government	16.6	38.6
XIII. Services	12.0	50.6
VI. Defense	10.3	60.9
I. Food & Lumber: Extraction & Processing	9.3	70.2
X. Trans. & Comm.	5.8	76.0
VIII. Construction	5.2	81.2
III. Primary Metals: Mining & Closely Rel. Processing	5.1	86.3
XII. Finance	4.6	90.9
VII. Other Mfg.	3.3	94.2
II. Energy & Fuels	2.8	97.0
V. Metal Fabrication	2.2	99.2
IV. Nonmetallic Min. & Chem. Products	1.0	100.2
		967.3

$$DI = \frac{967.3 - 700}{600} = 44.55$$

Category	Per Cent of Total	Cumulative
1970		
XI. Distribution	22.1	22.1
IX. Government	17.9	40.0
XIII. Services	13.0	53.0
VI. Defense	11.1	64.1
I. Food & Lumber: Extraction & Processing	7.6	71.7
X. Trans. & Comm.	5.0	76.7
XII. Finance	4.9	81.6
VIII. Construction	4.8	86.4
III. Primary Metals: Mining & Closely Rel. Processing	4.4	90.8
VII. Other Mfg.	3.3	94.1
II. Energy & Fuels	2.5	96.6
V. Metal Fabrication	2.3	98.9
IV. Nonmetallic Min. & Chem. Products	1.1	100.0
		976.0

$$DI = \frac{976.0 - 700}{600} = 46.00$$

Category	Per Cent of Total	Cumulative
1975		
XI. Distribution	22.4	22.4
IX. Government	19.6	42.0
XIII. Services	14.1	56.1
VI. Defense	9.7	65.8
I. Food & Lumber: Extraction & Processing	6.7	72.5
XII. Finance	5.2	77.7
VIII. Construction	4.6	82.3
X. Trans. & Comm.	4.4	86.7
III. Primary Metals: Mining & Closely Rel. Processing	3.9	90.6
VII. Other Mfg.	3.5	94.1
V. Metal Fabrication	2.5	96.6
II. Energy & Fuels	2.3	98.9
IV. Nonmetallic Min. & Chem. Products	1.3	100.2
		985.9

$$DI = \frac{985.9 - 700}{600} = 47.65$$

Category	Per Cent of Total	Cumulative
1980		
XI. Distribution	22.5	22.5
IX. Government	21.2	43.7
XIII. Services	15.3	59.0
VI. Defense	8.4	67.4
I. Food & Lumber: Extraction & Processing	5.8	73.2
XII. Finance	5.5	78.7
VIII. Construction	4.3	83.0
X. Trans. & Comm.	3.8	86.8
VII. Other Mfg.	3.6	90.4
III. Primary Metals: Mining & Closely Rel. Processing	3.4	93.8
V. Metal Fabrication	2.7	96.5
II. Energy & Fuels	2.0	98.5
IV. Nonmetallic Min. & Chem. Products	1.6	100.1
		993.6

$$DI = \frac{993.6 - 700}{600} = 48.93$$

United States

Category	Per Cent of Total	Cumulative
1952		
XI. Distribution	18.6	18.6
I. Food & Lumber: Extraction & Processing	17.0	35.6
VII. Other Mfg.	12.3	47.9
XIII. Services	9.8	57.7
IX. Government	9.5	67.2
V. Metal Fabrication	7.4	74.6
X. Trans. & Comm.	6.6	81.2
VIII. Construction	4.8	86.0
VI. Defense	4.4	90.4
XII. Finance	3.5	93.9
II. Energy & Fuels	2.7	96.6
III. Primary Metals: Mining & Closely Rel. Processing	1.8	98.4
IV. Nonmetallic Min. & Chem. Products	1.6	100.0
		948.1

$$DI = \frac{948.1 - 700}{600} = 41.35$$

Category	Per Cent of Total	Cumulative
1953		
XI. Distribution	18.6	18.6
I. Food & Lumber: Extraction & Processing	16.3	34.9
VII. Other Mfg.	12.6	47.5
XIII. Services	9.7	57.2
IX. Government	9.4	66.6
V. Metal Fabrication	7.7	74.3
X. Trans. & Comm.	6.5	80.8
VIII. Construction	4.7	85.5
VI. Defense	4.7	90.2
XII. Finance	3.6	93.8
II. Energy & Fuels	2.6	96.4
III. Primary Metals: Mining & Closely Rel. Processing	2.0	98.4
IV. Nonmetallic Min. & Chem. Products	1.6	100.0
		944.2

$$DI = \frac{944.2 - 700}{600} = 40.7$$

Category	Per Cent of Total	Cumulative
1954		
XI. Distribution	19.1	19.1
I. Food & Lumber: Extraction & Processing	16.4	35.5
VII. Other Mfg.	12.2	47.7
XIII. Services	10.3	58.0
IX. Government	10.0	68.0
V. Metal Fabrication	7.0	75.0
X. Trans. & Comm.	6.2	81.2
VIII. Construction	4.7	85.9
VI. Defense	4.3	90.2
XII. Finance	3.9	94.1
II. Energy & Fuels	2.6	96.7
III. Primary Metals: Mining & Closely Rel. Processing	1.8	98.5
IV. Nonmetallic Min. & Chem. Products	1.6	100.0
		949.9

$$DI = \frac{949.9 - 700}{600} = 41.6$$

Category	Per Cent of Total	Cumulative
1955		
XI. Distribution	19.0	19.0
I. Food & Lumber: Extraction & Processing	16.3	35.3
VII. Other Mfg.	12.1	47.4
XIII. Services	10.6	58.0
IX. Government	10.0	68.0
V. Metal Fabrication	7.2	75.2
X. Trans. & Comm.	6.1	81.3
VIII. Construction	4.9	86.2
VI. Defense	4.1	90.3
XII. Finance	3.9	94.2
II. Energy & Fuels	2.5	96.7
III. Primary Metals: Mining & Closely Rel. Processing	1.9	98.6
IV. Nonmetallic Min. & Chem. Products	1.6	100.0
		950.2

$$DI = \frac{950.2 - 700}{600} = 41.70$$

United States (Cont'd)

Category	Per Cent of Total	Cumulative
1956		
XI. Distribution	19.2	19.2
I. Food & Lumber: Extraction & Processing	15.6	34.8
VII. Other Mfg.	12.0	46.8
XIII. Services	10.5	57.3
IX. Government	10.4	67.7
V. Metal Fabrication	7.2	74.9
X. Trans. & Comm.	6.1	81.0
VIII. Construction	5.0	86.0
VI. Defense	4.1	90.1
XII. Finance	3.9	94.0
II. Energy & Fuels	2.5	96.5
III. Primary Metals: Mining & Closely Rel. Processing	1.9	98.4
IV. Nonmetallic Min. & Chem. Products	1.6	100.0
		946.7

$$DI = \frac{946.7 - 700}{600} = 41.12$$

Category	Per Cent of Total	Cumulative
1957		
XI. Distribution	19.3	19.3
I. Food & Lumber: Extraction & Processing	14.8	34.1
VII. Other Mfg.	11.9	46.0
IX. Government	11.0	57.0
XIII. Services	10.8	67.8
V. Metal Fabrication	7.2	75.0
X. Trans. & Comm.	6.0	81.0
VIII. Construction	4.8	85.8
VI. Defense	4.2	90.0
XII. Finance	4.0	94.0
II. Energy & Fuels	2.5	96.5
III. Primary Metals: Mining & Closely Rel. Processing	1.9	98.4
IV. Nonmetallic Min. & Chem. Products	1.6	100.0
		944.9

$$DI = \frac{944.9 - 700}{600} = 40.82$$

Category	Per Cent of Total	Cumulative
1958		
XI. Distribution	19.7	19.7
I. Food & Lumber: Extraction & Processing	14.6	34.3
IX. Government	12.0	46.3
VII. Other Mfg.	11.6	57.9
XIII. Services	11.3	69.2
V. Metal Fabrication	6.4	75.6
X. Trans. & Comm.	5.8	81.4
VIII. Construction	4.7	86.1
XII. Finance	4.2	90.3
VI. Defense	4.0	94.3
II. Energy & Fuels	2.4	96.7
III. Primary Metals: Mining & Closely Rel. Processing	1.7	98.4
IV. Nonmetallic Min. & Chem. Products	1.6	100.0
		950.2

$$DI = \frac{950.2 - 700}{600} = 41.67$$

Category	Per Cent of Total	Cumulative
1959		
XI. Distribution	19.6	19.6
I. Food & Lumber: Extraction & Processing	14.2	33.8
IX. Government	12.2	46.0
VII. Other Mfg	11.9	57.9
XIII. Services	11.2	69.1
V. Metal Fabrication	6.7	75.8
X. Trans. & Comm.	5.7	81.5
VIII. Construction	4.8	86.3
XII. Finance	4.2	90.5
VI. Defense	3.9	94.4
II. Energy & Fuels	2.3	96.7
IV. Nonmetallic Min. & Chem. Products	1.7	98.4
III. Primary Metals: Mining & Closely Rel. Processing	1.6	100.0
		950.0

$$DI = \frac{950.0 - 700}{600} = 41.67$$

Category		Per Cent of Total	Cumulative
United States (Cont'd)			
1960			
XI.	Distribution	19.8	19.8
I.	Food & Lumber: Extraction & Processing	13.8	33.6
IX.	Government	12.6	46.2
VII.	Other Mfg.	11.9	58.1
XIII.	Services	11.3	69.4
V.	Metal Fabrication	6.8	76.2
X.	Trans. & Comm.	5.6	81.8
VIII.	Construction	4.7	86.5
XII.	Finance	4.2	90.7
VI.	Defense	3.7	94.4
II.	Energy & Fuels	2.2	96.6
IV.	Nonmetallic Min. & Chem. Products	1.7	98.3
III.	Primary Metals: Mining & Closely Rel. Processing	1.7	100.0
			951.6

$$DI = \frac{951.6 - 700}{600} = 41.93$$

Category		Per Cent of Total	Cumulative
1965			
XI.	Distribution	20.3	20.3
IX.	Government	14.2	34.5
I.	Food & Lumber: Extraction & Processing	12.2	46.7
XIII.	Services	12.1	58.8
VII.	Other Mfg.	11.5	70.3
V.	Metal Fabrication	6.4	76.7
X.	Trans. & Comm.	5.2	81.9
VIII.	Construction	4.7	86.6
XII.	Finance	4.6	91.2
VI.	Defense	3.4	94.6
II.	Energy & Fuels	2.0	96.6
IV.	Nonmetallic Min. & Chem. Products	1.8	98.4
III.	Primary Metals: Mining & Closely Rel. Processing	1.6	100.0
			956.6

$$DI = \frac{956.6 - 700}{600} = 42.77$$

Category		Per Cent of Total	Cumulative
1970			
XI.	Distribution	20.6	20.6
IX.	Government	15.9	36.5
XIII.	Services	12.9	49.4
VII.	Other Mfg.	11.2	60.6
I.	Food & Lumber: Extraction & Processing	10.6	71.2
V.	Metal Fabrication	6.0	77.2
XII.	Finance	5.1	82.3
X.	Trans. & Comm.	4.8	87.1
VIII.	Construction	4.7	91.8
VI.	Defense	3.2	95.0
II.	Energy & Fuels	1.8	96.8
IV.	Nonmetallic Min. & Chem. Products	1.8	98.6
III.	Primary Metals: Mining & Closely Rel. Processing	1.5	100.1
			967.2

$$DI = \frac{967.2 - 700}{600} = 44.53$$

United States (Cont'd)

Category	Per Cent of Total	Cumulative
1975		
XI. Distribution	20.9	20.9
XI. Government	17.0	37.9
XIII. Services	13.8	51.7
VII. Other Mfg.	10.8	62.5
I. Food & Lumber: Extraction & Processing	9.3	71.8
V. Metal Fabrication	5.7	77.5
XII. Finance	5.6	83.1
VIII. Construction	4.6	87.7
X. Trans. & Comm.	4.4	92.1
VI. Defense	2.9	95.0
IV. Nonmetallic Min. & Chem. Products	1.9	96.9
II. Energy & Fuels	1.6	98.5
III. Primary Metals: Mining & Closely Rel. Processing	1.4	99.9
		975.5

$$DI = \frac{975.5 - 700}{600} = 45.91$$

Category	Per Cent of Total	Cumulative
1980		
XI. Distribution	21.4	21.4
IX. Government	17.3	38.7
XIII. Services	14.8	53.5
VII. Other Mfg.	10.5	64.0
I. Food & Lumber: Extraction & Processing	8.2	72.2
XII. Finance	6.1	78.3
V. Metal Fabrication	5.4	83.7
VIII. Construction	4.6	88.3
X. Trans. & Comm.	4.0	92.3
VI. Defense	2.7	95.0
IV. Nonmetallic Min. & Chem. Products	2.0	97.0
II. Energy & Fuels	1.5	98.5
III. Primary Metals: Mining & Closely Rel. Processing	1.4	99.9
		982.8

$$DI = \frac{982.8 - 700}{600} = 47.13$$